

# SINCLAIR PROGRAMS

BIRTHDAY  
**3RD**  
ISSUE

ANNIVERSARY  
COMPETITION



**SPECIAL HOLIDAY OFFER**

**TWENTY GREAT LISTINGS FOR  
THE SPECTRUM AND ZX-81**

AVAILABLE FROM  
High Street Computer Retailers  
and branches of W. A. Smith, Boots,  
John Lewis Partnership, Laikins, Currys.

# EVEN THE PRICE WILL KEEP YOU IN THE BLACK

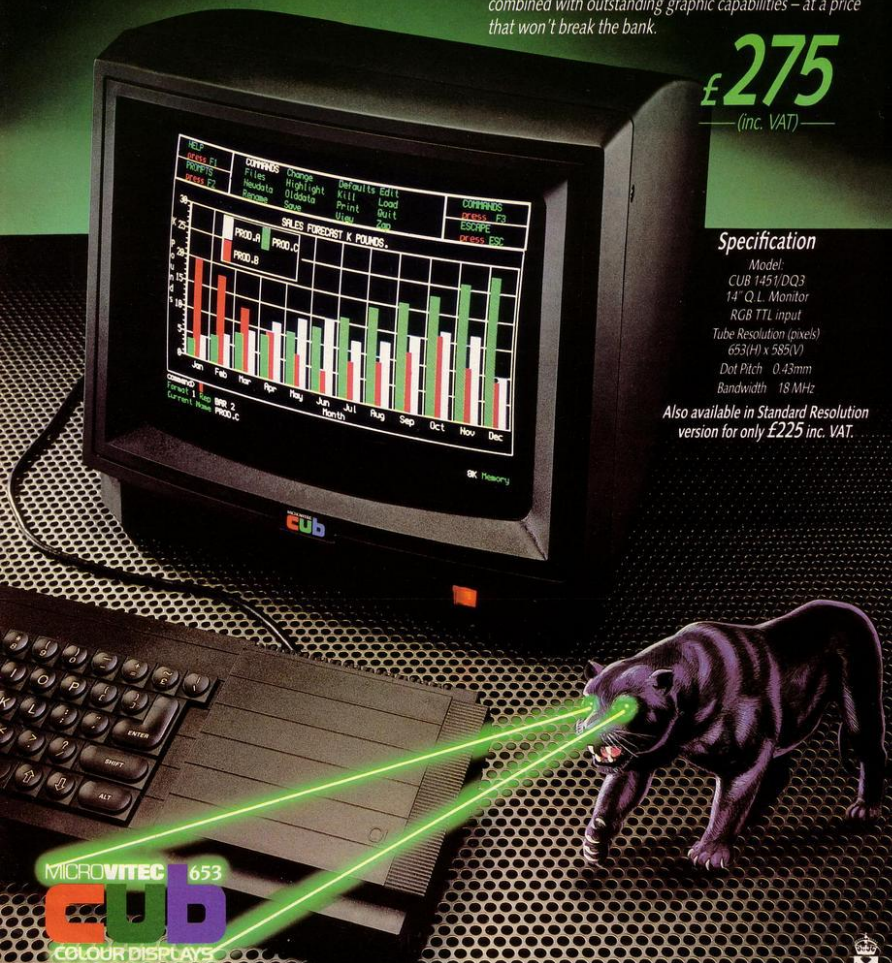
This sleek, black Microvitec CUB medium resolution colour monitor has been designed to be totally compatible with the Sinclair Q.L. An ability to display 85 column text is combined with outstanding graphic capabilities – at a price that won't break the bank.

£275  
(inc. VAT)

## Specification

Model:  
CUB 145 V/DQ3  
14" Q.L. Monitor  
RGB TTL input  
Tube Resolution (pixels)  
653(H) x 585(V)  
Dot Pitch 0.43mm  
Bandwidth 18 MHz

Also available in Standard Resolution  
version for only £225 inc. VAT.



MICROVITEC 653  
**CUB**  
COLOUR DISPLAYS

Microvitec PLC, Futures Way, Bolling Road, Bradford BD4 7TU, West Yorkshire. Tel: (0274) 390011. Telex: 517717





# CONTENTS

## Graphics

5



Soft focus

Editorial 5

Letters 7

News 10

Soft focus 14

Listings 19

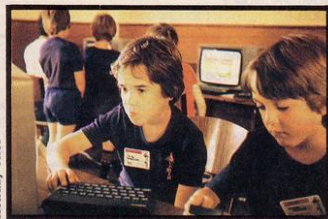
Notice board 28

Questline 30

32 Listings 38

36 Sprogs 39

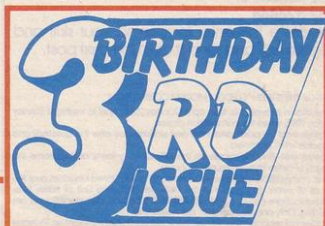
37 Listings 40



Holiday offer

Special holiday offer 42

Program tutor 44



Anniversary competition

49

Chart

50

Pro-printout 52

Haunted belltower

Listings 55

Link to Giant Mainframes and network to thousands of Micro users via your 'phone with free Modems and Comms software in the British Telecom Modem competition.

British Telecom is offering 1000 free gift packs to plug direct into your home 'phone line.

British  
**TELECOM**

# MODEM COMPETITION

## 1000 FREE MODEMS

500 for Spectrum/Spectrum +  
350 for BBC Model B  
150 for Commodore 64

And if you haven't got a square-type BT phone socket, British Telecom will arrange to alter your installation at no charge!

### HOW TO ENTER

(Monday 22nd April to Sunday 5th May 6pm to midnight)

For the 5 questions 'phone

01-627 3000 or  
021-449 9944 or  
031-225 8999

To get the Tiebreaker Sentence 'phone

01-627 1199 or  
0532 455030 or  
0632 324444

Complete the entry form using your skill and judgement, and send it off in the next post.

#### RULES OF THE BRITISH TELECOM MODEM COMPETITION

- The dial-in is available from 6pm Monday 22nd April to midnight Sunday 5th May 1985, when the competition closes.
- Entries must be postmarked the next working day after the questions and tiebreaker were obtained.
- Entries can only be made on the official entry forms and become the property of British Telecommunications plc.
- The competition is open only to residents of the United Kingdom over the age of 18 years. Employees of the Network Marketing Unit of British Telecommunications plc and PARKER REDMILL LTD. and their dependants are excluded. Only one winning entry per household.
- Entries not reaching the competition address before midnight on Thursday 9th May 1985 will not be considered.
- A list of winners will be provided at the competition address. Please send an SAE if you wish to receive it.
- The winners will be picked as follows from entries received on time and properly completed -  
The entries for each type of prize pack with all correct answers to the 5 questions and with the tiebreaker sentences judged most apt and humorous by the competition organisers will be chosen, subject to the stock of appropriate prize packs.
- The decision of the competition organisers is final and no correspondence will be entered into. Winners will be notified automatically.
- British Telecommunications plc offers winners requesting BT 'phone socket conversion an entry form to waive the charge normally made for such work.
- Details of how to get on Prestel/Micronet 800/Telecom Gold will be sent to winners. Subscriptions not included in prize.

### OFFICIAL ENTRY FORM

A. Your answers:

- Q1 .....  
Q2 .....  
Q3 .....  
Q4 .....  
Q5 .....

B. Tiebreaker Sentence complete (25 words or less in total):

"....."  
"....."

C. If I win, I would like the prize pack for the

- ☐ SPECTRUM/SPECTRUM +  
☐ BBC MODEL B  
☐ COMMODORE 64 (Tick Choice)

D. My home telephone line (\*Delete as appropriate)

- (a) already has a square-type BT 'phone socket \* or  
(b) would need converting to square-type BT 'phone socket \*

If (b), the person renting the line from British Telecom must fill in this declaration -  
If this is a winning entry, I agree to ask British Telecom to convert my line to square-type BT 'phone socket at a convenient date before 1st July 1985. My line is on Residential rental, is not a coinbox and is not shared service.  
I understand British Telecom will not charge for doing the work.

Name ..... (Block Capitals)

Telephone number .....

Signature .....

Date ..... 1985

E. I have read the rules of the British Telecom Modem competition and agree to abide by them. I am over 18 years old.

Signature of entrant .....

Date ..... 1985

Name ..... (Block Capitals)

Address .....

.....

..... Postcode .....

POST IMMEDIATELY TO:-  
British Telecom Modem Competition  
PO BOX 73  
MITCHAM  
SURREY  
CR4 2XJ

(Postage stamp required)

SP

**WINNERS WILL BE NOTIFIED AUTOMATICALLY**



**W**ELCOME to our third birthday issue. The first issue of *Sinclair Programs* went on sale in May 1982, and contained forty programs written for the ZX-81 and ZX-80.

A year later we became a monthly, rather than a bi-monthly magazine and, since then, we have gone from strength to strength, expanding our editorial, and constantly improving the quality of our listings.

This month we are pleased to be able to offer you the chance of attending the first ever **Sinclair Programs computer holiday**. We have linked up with **Dolphin holidays**, who are computer camp specialists, to produce a very special holiday for Sinclair Programs readers.

Instruction at the camps is by experts, everyone will be able to use either a ZX-81 or a Spectrum and will have access to an enormous collection of hardware ranging from speech recognition systems to robot buggies.

For those people unable to attend the special **Sinclair Program** we have negotiated cut price rates on other Dolphin Computer Holidays. There are special reductions on both Basic and Advanced courses. Turn to page 42 for more details on this great offer.



Instructions for graphics characters are printed in lower-case letters in our listings. They are enclosed by brackets and separated by colons to distinguish them and the brackets and colons should not be entered.

Inverse characters are represented by the letter "i" and graphics characters by "g". Thus an inverse W would be represented by "iw", a graphics W by "gw", and an inverse graphics W by "igw".

Spaces are represented by "sp" and inverse spaces by "isp". Whenever any character is to be used more than once, the number of times it is to be used is shown before it, together with a multiplication sign. Thus "6\*isp" means six inverse spaces and "(g4:4\*14:g3)" would be entered as a graphic four, followed by an inverse four repeated four times, followed by a graphics three.

Where whole words are to be written in inverse letters they appear in the listings as lower-case letters. Letters to be entered in graphics mode on the Spectrum are underlined.

Inverse characters may be entered on the ZX-81 by changing to graphics mode and then typing the appropriate characters and on the Spectrum by changing to inverse video and typing the appropriate letters. Graphics characters may be entered on the ZX-81 by changing to graphics mode and then pressing symbol shift while the appropriate characters are entered. On the Spectrum graphics characters may be obtained by changing to graphics mode and then pressing the appropriate character. User-defined graphics will appear as normal letters until the program has been RUN.

Editor  
Rebecca Ferguson

Staff writer  
Colette McDermott

Design/illustration  
Elaine Bishop

Advertisement manager  
Shahid Nizam

Production co-ordinator  
Serena Hadley

Advertisement secretary  
Maria Keighley

Subscription manager  
Carl Dunne

Publisher  
Neil Wood

Sinclair Programs is published  
monthly by EMAP Business and  
Computer Publications.

Telephone 01-251 6222

If you would like your original programs to be published in Sinclair Programs, please send your contributions, which must not have appeared elsewhere, to:  
Sinclair Programs,  
EMAP,  
Priory Court,  
30-32 Farringdon Lane,  
London EC1R 3AU

Programs should be on cassette. We cannot undertake to return them unless a stamped, addressed envelope is included. We pay £25 for the copyright of listings published and £10 for the copyright of listings published in the Beginners' section.

© Copyright 1985 Sinclair Programs  
ISSN No 0263-0265

Printed and typeset by Cradley Print PLC,  
Warley, West Midlands  
Distributed by EMAP National  
Publications Ltd.

All subscription enquiries:  
Magazine Services,  
EMAP,  
Priory Court,  
30-32 Farringdon Lane,  
London EC1R 3AU  
Telephone 01-251 6222

Cover illustration—Craig Kennedy

ABC

## Interactive BASIC Programming for 48K ZX Spectrum & Spectrum + ATTENTION ALL SPECTRUM USERS!

LEARN BASIC WITH YOUR HANDS ON THE KEYBOARD, NOT WITH YOUR HEAD IN A BOOK! Now you can learn ZX BASIC programming with your Spectrum. 'Interactive BASIC Programming' is a unique package in twelve parts. Look at these features:

- \* Plain English (yes, real English not jargonese).
- \* Due to an amazing programming technique you will have **complete** control over Spectrum BASIC. So you can write, save and load programs while using 'Interactive BASIC Programming'.
- \* All ZX BASIC is covered.
- \* You'll learn about graphics (see some on this ad), colour, sound, motion, system variables, menus and much more, explained simply.
- \* Problems are given with hints and answers in the form of programs that are put into BASIC for you to look at, run and alter.
- \* You'll learn how to write your own games (by way of examples) and how to put your machine to serious use (e.g. graphs, problem solving, filing system).
- \* More than 250K (yes, two hundred and fifty kilobytes).
- \* After sales support at no additional cost: write or telephone if you have any questions about Spectrum BASIC.
- \* "An educational program which shows real inventiveness - better still it teaches Sinclair Basic."

- Popular Computing Weekly 7/3/85

Britain is the Software Capital of the World - far superior to the U.S.A. The computer revolution is just beginning and as the emphasis shifts from hardware to software WE are best placed to shape the future. The writing's on the wall: get actively involved while the industry is young.

(Amstrad, MSX, Atari 800XL, CBM 64, BBC/Electron versions are in preparation.)

To receive the whole package by return of post send **£9.95 (p & p free)** to:  
EIGEN SOFTWARE 45 Bancroft Road, Widnes, Cheshire. WA8 0LR  
Tel. 051-423 6201

$$\vec{H}\psi = E\psi$$

EIGEN SOFTWARE create reality

# THE FABULOUS CASSETTE

# 50

FROM **cascade**

**ONLY £9.95**  
(INC. P&P AND VAT)

**VALUE that's out of this world**

## 50 GAMES ON ONE CASSETTE

NOW AVAILABLE FOR Commodore 64 ELECTRON Almos  
DRAGON BBC A16 Spectrum Apple ATARI ORIC-1 ZX81 VIC-20

**SPECTRUM 16k/48k or +**  
"Incredibly frustrating!" - that's the verdict on Cascade 50+ PROLOG. Satisfied users tell us it's one of the most challenging you'll find - it's almost as good as the arcade version! CARGO has you trying desperately to complete your helicopter mission under attack. Plus 48 other tactical, logical and adventure games featuring multi-coloured and user-defined graphics, scrolling and full use of the Spectrum sound capabilities.

No.	Name	No.	Name	No.	Name
1	MUNCHER	31	SKY RUN	51	BRIDGE
2	CLIMB	32	SKY SEARCH	52	INTERIOR
3	ADVENTURE	33	SOLAR SHIP	53	HOW
4	PROLOG	34	ZIP PING	54	STORM
5	WREATH	35	STOMP	55	SECTOR PAD
6	PRISON	36	STOMP	56	SECTOR PAD
7	THUNDER	37	STOMP	57	SECTOR PAD
8	MARTIAN	38	CAUTION	58	SECTOR PAD
9	ONCE OUT	39	CAUTION	59	SECTOR PAD
10	ROCKET	40	CAUTION	60	SECTOR PAD
11	ARMY ATTACK	41	CAUTION	61	SECTOR PAD
12	LINEAR JANGER	42	CAUTION	62	SECTOR PAD
13	MAZE	43	CAUTION	63	SECTOR PAD
14	MAZE	44	CAUTION	64	SECTOR PAD
15	MAZE	45	CAUTION	65	SECTOR PAD
16	MAZE	46	CAUTION	66	SECTOR PAD
17	MAZE	47	CAUTION	67	SECTOR PAD
18	MAZE	48	CAUTION	68	SECTOR PAD
19	MAZE	49	CAUTION	69	SECTOR PAD
20	MAZE	50	CAUTION	70	SECTOR PAD

**EXPRESS DELIVERY ORDER NOW**

Name \_\_\_\_\_

Address \_\_\_\_\_

Post Code \_\_\_\_\_

Country \_\_\_\_\_ SP 5/85

Dealers & Stockists enquiries welcome.

Postage FREE. Goods will be despatched within 7 days.

I enclose a cheque/ ☐ made payable to Cascade Games Ltd.  
postal order for ☐ £ \_\_\_\_\_

or through any Post Office by TRANSFASH (Giro No. 695 6655)  
For even faster ordering when charging to Access, Barclaycard and  
Trustcard Visa use our 24 hour service. (0423) 504526.

☐ ☐ No. \_\_\_\_\_

COMMODORE 64	VIC 20	ORIC 1	BBC A16
SPECTRUM	ELECTRON	ZX 81	APPLE
ATARI	ATMOS	DRAGON	<input checked="" type="checkbox"/>

Cascade Games Ltd.  
1-3 Haywards Crescent, Harrogate,  
North Yorkshire, HG1 5BG England.  
Telephone: (0423) 504663. Registered Number 1755554

**50 GAMES ALSO AVAILABLE FOR ZX81**

**WE PAY TOP PRICES FOR TOP QUALITY GAMES**



## More than Sufficient

FOLLOWING the repeated failure of my ZX-81 keyboard I decided to try to get hold of a new keyboard and replace it myself. First of all I phoned Sinclair Research. They could not help me, but gave me the number of CPC in Preston, who supply many Sinclair computer parts. However, when I phoned them I was told that, due to the fact that they had a minimum order charge, it would cost me £9.60, for four keyboards!

As I have only one ZX-81 I want only one keyboard. I now have four options: buy four keyboards, buy another sort of keyboard for around £30, send my computer to a repair shop to do a job that I could do myself, or keep my broken keyboard.

Is there anything that anyone can do to help me to get this spare part which should only cost a little over £2?

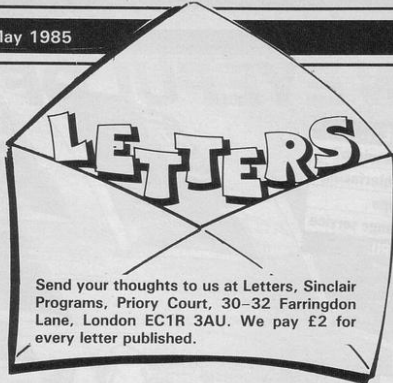
**Peter Sanson,**  
Wisbech, Cambs.



## Stuck on the roof

CAN ANYONE help me with **Jet Set Willy**?

My difficulty centres around the collection or, in my case, non-collection of the four bottles which are located on the Conservatory Roof. What I want to know is: what route do I have to take to gain access to the platform from which you



Send your thoughts to us at Letters, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU. We pay £2 for every letter published.

jump up to collect the four bottles? I have attempted what I feel to have been every conceivable route, and have got absolutely nowhere.

For example, any attempt to jump across from the sloping section of the conservatory roof invariably results in an undignified and remaining-life-removing plunge through the Orangery into the Swimming Pool.

**Peter Lawrence,**  
Capel St Mary, Suffolk  
• Can anyone out there help Peter? Let us know if you can reach those four bottles.

## Beat that Ghostbusters

I AM dropping you a quick line to say that I have just scored my best amount of money on **Ghostbusters**. It is \$855,900, and I was wondering whether anyone has beaten this.

I have also found two bugs in the game. The first one is that, when you are driving your car

and a roamer is on the far left hand side, you cannot suck it up. The second one is that, after you have listened to the logo once, you don't get the words the next time.

Thank you for a brilliant magazine.

**Andy Herrod,**  
Leatherhead, Surrey.

## Total disagreement

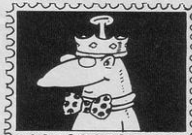
I TOTALLY disagree with your review on **Match Day**. I think that it is probably the best game on the market. You only rated it at 50%. I would have rated it at least 90%.

**Gavin Wilding,**  
Thorndon, Suffolk

YOUR review of **Match Day** in March 1985 is totally wrong, and might put off would-be buyers. It is worth at least 90%, and is one of the best Spectrum games out. There are many others who would agree with me. It is one of those games which take a lot

of mastering, but once this is done it becomes comparatively easy. The graphics for this game are brilliant, and the movement is authentic, especially the goalkeeper.

**Stephen Luckin,**  
Littlehampton, Sussex



I AM writing to say just how annoyed I am about your review of **Match Day** by Ocean. How could you only give it 50%, the game is fantastic. My friends and I are always playing it. Looking through your magazine we see **Match Day** and read on in the hope of a good review, but we find nothing but comments on what is missing and not what is there. So, whoever reads this letter, **Match Day** is definitely value for money.

**Bradley Swift,**  
Rochdale, Lancs.

## Congrats all round

BRILL, fab, outstanding: what is it? The new-look **Sinclair Programs**, of course. The new magazine is absolutely incredible. Congrats to all, and keep up the good work.

**Michael Meagher,**  
Rosecrea, Ireland.  
• Obviously a man of taste.

Please complete this form and enclose it with any program which you send to us for possible publication.

To: Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

I enclose.....Program(s) for the .....computer.

I guarantee that each program submitted is my original work.

Signed .....

Name .....

Address .....

# GET AN EYEFUL OF THIS!

95p EVERY MONTH

INSIDE THE MAY ISSUE ...

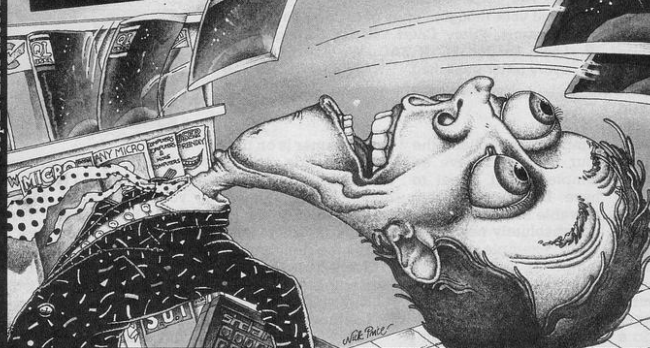
QL's Dilemma: PC or home micro?

Brother EP44 and TC600 interfacing

Psion problems page

Microdrive programs exchange service

ON SALE 21ST APRIL



SINCLAIR'S SUPERMICRO

# QL USER

QL USER — THE ONLY MAGAZINE FOR QL OWNERS AND ENTHUSIASTS.

95p EVERY MONTH

## AN APPOINTMENT NOT TO BE MISSED EVERY MONTH!

1984

Tuesday  
200-16 Week 42

16

**Sinclair User** magazine hits the street on the 16th of every month packed with enough material to keep both you and your Sinclair machine fully occupied until the same time next month.

**Sinclair User** magazine, is devoted entirely to the Sinclair ZX81 and Spectrum. Everything you need to know about the latest peripherals and software releases, as well as letters, book reviews, program listings and competitions. Plus special sections for beginners business and education. We even have a special telephone 'hotline' for those problems that just can't wait.

No wonder **Sinclair User** is the UK's top selling Sinclair magazine.

Available from your newsagents now, only 85p

September 1984

An independent magazine published by EMAP Publ

# sinclair user

Only 85p

SPECTRUM USER

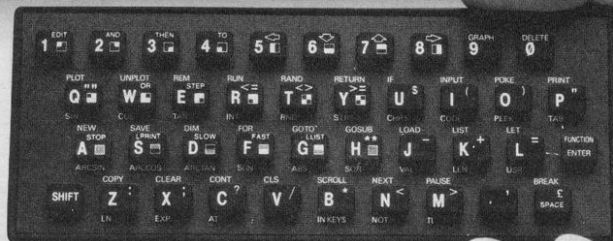
THE TRASHM  
COME  
top au  
talks



FREE  
SOFTWARE  
BOOKS



# A NEW, IMPROVED ZX81 KEYBOARD AT THE SAME OLD PRICE. £9.95.



There's only one thing wrong with the ZX81. Its keyboard.

Or rather its lack of one.

Since it's flat your fingers don't feel as if there's any response to the pressure put on the keys.

ZX81 KEYS

FILESIXTY KEYS

In other words, you're not quite sure which keys you've pressed until the screen actually tells you.

Our new, improved push button keyboard changes all that.

It matches the ZX81 perfectly. And the keys give a real calculator-type feel.

To set it up all you have to do is peel off the adhesive backing and stick it on top of the ZX81 touchpad.

Because no tampering or soldering is involved the guarantee is not affected. And it will last for up to 3½ million operations.

Filesixty Ltd., 25 Chippenham Mews, London W9 2AN, England. Tel: 01-289 3059. Telex: 268 048 EXTLDN G 4087.

But our keyboard doesn't just come loaded with features. With it comes a separate overlay and a set of coloured stick-on labels to make game playing easier.

It's yours for the original price of £9.95.

Whichever way you look at it, we think you'll agree that it's a keyboard that's quite outstanding.

Orders to Filesixty Ltd., FREEPOST, London W9 2BR.  
Cheques/PO made payable to Filesixty Ltd.  
Please send me (qty) Keyboards at £9.95 each  
(including VAT and P&P).

Total £

Name

BLOCK CAPITALS

Address

**FILESIXTY**

## Name game

**F**EBRUARY'S competition was held to decide the most apt name for a creature from Fantasy Software's game, **Backpackers Parts 1 and 2**.

Vincent Burne, Richard Church, David Green, Nagesh Verma, Daher Patrick, Mr I. F. Watts, Andrew Hunt, James Hill, Philip Marston, Neil Gallichan, Jonathan Clark, Duncan McAdam, Paul Golledge,



Fifty winners were chosen, and while we cannot list all the wonderful and hilarious names we think that some deserve a mention:

Tartanpunkas, Multi coloured Skunk Punk, Punkaggs, or perhaps Punk-u-Pine.

The winners, who will receive parts 1 and 2 of the **Backpackers** game, are:

Craig Herriot, P. Carroll, R. G. Hawley, Nathan Merills, Jonathan Brewster,

Adam Ledger, Ken Senaei, Mr C. J. Haylett, William Turner, Andrew Smellie, Kevin Bradley, Martin Greenaway, Darren Purcell, Richard Harrison, Neil Drew, Andrew Morton, A. Downs, Stephen Price, J. Gordon, N. Bygate, R. Bayle, Robert Ward, Paul Cox, John Kemp, Mark Thornton, Glenn Field, Philip Evans, Innes Ferguson, J. Downton, Mark Sorrell, H. R. Hawkins, Agustin Malave, David MacFarland, Ed Mansell, Gavin Peebles, Denise Jennians, Ross Morley.

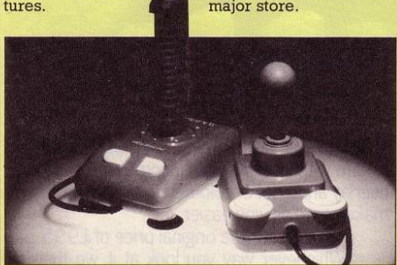
## Good move

**K**EMPSTON Micro Products have launched their new range of joysticks and interfaces, which went on sale on March 1st.

For £11.95 the **Formula 2** joystick is the cheaper of the two, the **Formula 1** will cost £16.95. They will have self centering and improved positive action in addition to the usual Kempston features.

The new interfaces begin at £9.95 for the **Kempston Joystick**, £18.95 for the **Pro joystick** and £39.95 for the **Centronics 'E' interface**. They will have more robust mouldings for increased durability and all will be compatible with the Spectrum Plus.

The new range can be bought through any major store.



## DISC-COVERY

**O**PUS Supplies launched a new range of disc drives in March which are compatible with both Spectrum and Spectrum Plus. They regard their new system as the first to seriously threaten the cassette loading systems.

The **Discovery 11**, which has duel drive capabilities can be bought for £329.95, or you can start off with the **Discovery 1** which, at £199.95, has a single disc drive and then upgrade it to a duel drive with the **Discovery plus**, which

costs £139.95. The **Discovery** systems will only be available through Boots.

Boots have commissioned six top software houses to produce the first programs for the **Discovery** range. These will be on three and a half inch discs, costing £14.95 each. The programs and companies involved are: **Activision**, **Designer Pencil**, **Micro-mega** with three games on one disc, **Jasper**, **Code Name Mat** and **Kentilla**, Melbourne House with two games,

**Sports Hero** and **Mugsy**, Hewson Consultants with two, **Heathrow Air Traffic Control** and **Technician Ted**, Data Base Publications, **Mini Office**, a program with

word processing graphics and a data base; and **Romantic Robot**, **Advanced utility** and **file handling**. They are all now available, and more programs are promised.





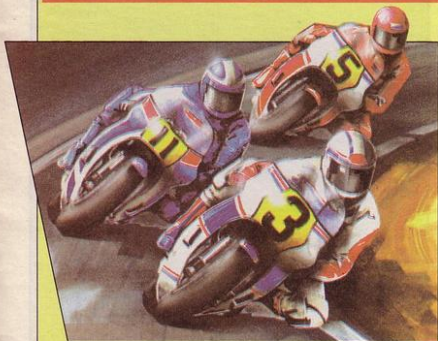


## PARTING COMPANY

**B**YOND Software have decided to split their publishing operation into two separate companies. Adventure and strategy games will continue to be produced under the old Beyond Software label, while arcade games will be under the new label. Their first game, which remains unnamed, will be released in June.

**Shadow Fire**, released

in March, has had a unique cassette tuner developed to enhance its playability. It enables you to change the perimeter and characters within the game, thereby extending the games usage. The tuner will cost about £2 to £2.70 and is available through Beyond Software, Lector Court, 151 Farringdon Road, London EC1R 3AD.



## Digital decide on double release

**D**IGITAL Integration are launching two new games which are due out soon.

**Tomahawk** is a sequel to **Fighter Pilot** and it is

expected to be equally popular. The second new game is **T. T. Racer** which is a motorcycle simulation game. Prices have yet to be decided.



## ZX-81 reviver

**S**OFTWARE Farm will launch their new program **Spectrumiser** at the end of April. It is a high resolution graphic program which enables the ZX-81 graphics to ob-

tain the same quality and standard as those on the Spectrum. It also has the ability to convert basic into machine code. **Spectrumiser** will retail at £5.95.

## A STAR IS BORN

**M**ELBOURNE House are also launching a new game, **Starion**, which was due for release at the end of March.

It will cost around £7.95 and is described as "A space epic" by Paula Byrne from Melbourne House. "It has stunning graphics and involves a space pilot travelling through over 243 different scenes. The game also has exploding space ships which when disintegrated form letters which involve you in a puzzle running in conjunction with the main plot of the game."



## Getting Hooked

**O**CEAN have a new game coming out at the end of April called **World Series Baseball**.

Imagine were originally going to market the game, but as Ocean have bought the title of the company they decided to launch it under their own title.

It is a sports simulation and will cost £6.95.

# WHICH MICRO

COMMODORE 64 HANDBOOK

SPECTRUM HANDBOOK



Britain's two most popular personal computers, the Commodore 64 and Spectrum are covered from basic to semi-expert in **Which Micro Magazine's Handbooks**.

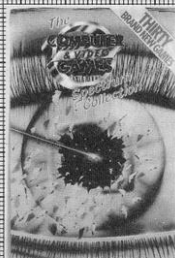
Author **Pete Gerrard**, a regular columnist for **Which Micro**, has put together an accurate and practical guide to both computers, at £4.99 per book.

Many programs are included and both 160-page books are spiral bound for easy use and are available in all good bookshops from November or direct through your letterbox by sending to EMAP Books, Bushfield House, Orton Centre, Peterborough PE2 0UW.

Commodore  
Collection

COMPUTER  
& VIDEO  
GAMES

Spectrum  
Collection



**Computer and Video Games**, Britain's most popular computer games monthly, bring you two exciting new books for the Spectrum and Commodore 64.

Each 100-page book contains up to 30 **brand new** games checked and prepared by **Computer and Video Games'** regular contributors.

At £4.99 - the best value on the market at all good bookshops from November or send to EMAP Books, Bushfield House, Orton Centre, Peterborough PE2 0UW.

## FAST COMPUTER REPAIRS

### VIDEO VAULT INTERNATIONAL 10★ REPAIR SERVICE

Spectrums repaired for £19.95 inc. Parts, Insurance and P & P No Hidden Extras. BBC, Commodore 64, Vic 20, Atari, Quoted for.  
Are you fed up with waiting weeks for your Home Computer to be repaired!!! Why not try the Experts, we offer a full repair service on any Home Computer. All repairs carry a full 3 months guarantee, plus on every Spectrum repaired we send you a free game worth £5.95 for your enjoyment and pleasure.

- ★ While you wait Service by Professional Computer Engineers.
- ★ 3 Months written guarantee on all repairs.
- ★ International repair company.
- ★ All computers sent by mail order turned around in 24 hrs.
- ★ Most Spectrums repaired within 45 minutes.
- ★ All Micros insured for return journey.
- ★ Open 7 days a week.
- ★ School repairs undertaken-discounts available.
- ★ Free software with each Spectrum repaired worth £5.95.
- ★ Over 8 years experience working with computers.

ONLY GENUINE SINCLAIR PARTS USED.

Phone today for your free estimate or send your computer to us with £1.75 (UK EIRE I.O.M. C.I.) or £6.50 (Europe/Scandinavia) we will contact you the same day by phone or 1st class Mail should you require quotation first.

TRADE ENQUIRIES MOST WELCOME. ACCESS WELCOMED

VIDEO VAULT LTD Dept R18 THE LOGICAL CHOICE

**VideoVault**  
VideoVault

Telephone: Glossop (STD 04574) 66555.  
140 High St. West, Glossop, Derbyshire, England.

FREE GAME WORTH  
**£5.95** WITH  
EACH SPECTRUM  
REPAIR

## THE RANDOM ADVENTURE FOR THE 48K SPECTRUM

Send £5.50 to INDIGO  
51 Carmel Road South, Darlington  
County Durham DL3 8DU



We can't show you all the views  
of the Lords of Midnight,  
there are 32,000!



We've invented a new programming technique called Landscaping, creating a completely new kind of game, the EPIC.  
You'll get the chance to shape the characters into your own fantasy novel by playing out the different roles in the ever changing world of Midnight.

**BEYOND**



To... Beyond Competition House,  
Farnham Road, Market Harborough,  
Leicestershire LE19 9NR.

Please send me . . .

QTY

Total Price

THE LORDS OF MIDNIGHT £9.95

PSYTRON £7.95

SPELLBOUND £5.95

BEYOND ORDER HOTLINE 0858 34567

BEYOND ENQUIRY HOTLINE 01-251 8496

GRAND

TOTAL

all prices include p&h

**BEYOND**  
CHALLENGING SOFTWARE



I enclose a Postal Order/Cheque payable to Beyond, or charge my credit card.

Card Number

Access/Visa (Delete as necessary)

NAME

ADDRESS

POST CODE

SIGNATURE

Please rush me details of the "ENTER the BEYOND" Software Club . . .

☐



# GET LOST!

## EMERALD ISLE

**L**LEVEL 9 have done it again. Their new adventure, **Emerald Isle**, is superb. Jam-pack full of problems, pictures, clues and scenarios, **Emerald Isle** is a definite winner.

You begin the adventure hanging from a parachute, which is the first of a series of tricks played on the experienced adventurer. Surely you have been here before, some other time, some other game? Escape from the parachute leads to a maze. Again, experienced adventurers will cry "Easy", but a little too soon. You see, there is no way of mapping this maze, objects dropped within it are lost forever, and your compass is no use at all.

The game appears to adapt itself to your skill

level. For example, everyone who plays adventures frequently knows that you do not go into the dark without a light. Beginners will stumble blindly through, and find themselves on the right track again.

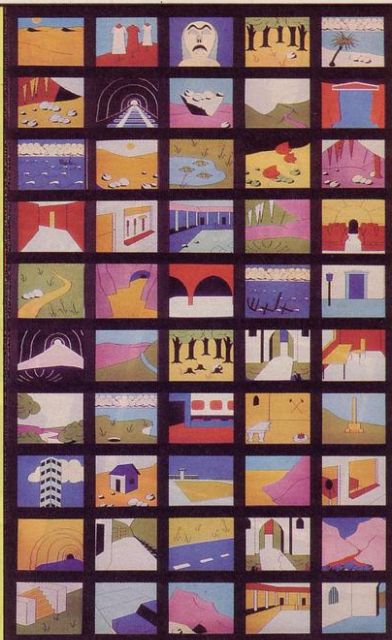
The scope of the game is enormous. Leave the jungle, cross the city, take a train journey and then venture through the mountain and you could still only have scored 30/1000.

**Emerald Isle** is a brilliant adventure, buy it at once. Produced for the 48K Spectrum by Level 9 Computing, 229 Hughenden Road, High Wycombe, Bucks.

**Price: £9.95**

**Game type: Adventure**

**Rating: 90%**



## STAY KOOL

**W**HAT HAS happened to Bug Byte? There was a time when you could rely on them for excellent games. Their latest one, **Stay Kool**, is no fun at all. In the face of the excellent new releases on the market this month it is worse than no fun, it is pathetic.

In another lame take off of the **Jet Set Willy** theme you move from room to room collecting

objects. The problems are ingenious, the rooms are nicely named, the graphics are not bad, but the idea is stale, stale, stale.

**Stay Kool** is produced for the 48K Spectrum by Bug Byte, Mulberry House, Canning Place, Liverpool.

**Price: £6.95**

**Game type: Arcade**

**Rating: 35%**



## WIZARD'S LAIR

**O**NCE UPON a time, well over a year ago, a company called Ultimate brought out two games called **Atic Atac** and **Sabre Wulf** for the Spectrum. Now Bubble Bus have produced **Wizard's Lair**, which bears a very very strong resemblance to both games. **Atic Atac** meets **Sabre Wulf**.

It is great fun. The graphics are excellent. Move from room to room on a variety of levels, cross the river which flows through the rooms and caverns, avoid the knight and the grim reaper, avoid or zap the energy sapping bad-dies, collect all objects you find, collect the four parts of the Great Lion, find the exit, and es-

cape. Phew.

**Bubble Bus** cannot claim originality. What they can claim is that



they have produced a very good game. It is fast-moving, it is difficult, there is lots to see and lots to do.

Produced for the 48K Spectrum by **Bubble Bus**.

**Price: £6.99**

**Game type: Arcade**

**Rating: 72%**



## EVERYONE'S A WALLY

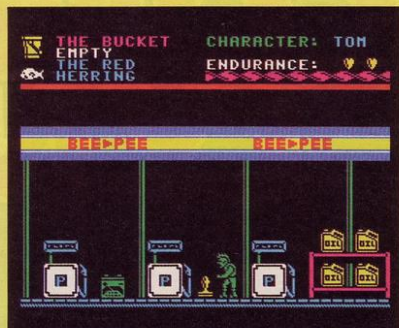
**T**HE WALLY series goes from strength to strength. The follow up to the excellent *Pyjamarama*, *Everyone's a Wally* is even better, and even more difficult.

You move Wally, or Tom or Dick or Harry or Wilma around the screen, trying to complete their appointed tasks. There are roads and shops and houses and building sites, all drawn in wonderful detail, for you to visit. All these locations seem to be crammed full of objects, and doubtless the majority of these objects has a use, if you could only work out what it is.

The trouble is, the

other characters will not stay still. For example, you may decide that the patch beneath the docks is the one way to stop the leak in the fountain. So you make your way to the docks, avoid the shark, and find that the patch is gone, and a massive book is in its place. It strikes you that you just saw Wilma leaving, so you track down Wilma, swap from Wally to Wilma, and find that she is not carrying the patch. However, when, by chance you walk into the house, there is the patch, where Wilma left it, but Harry is now carrying it.

As usual in the Wally games, everything is



against you. Inanimate (or usually inanimate) objects, your friends, even the shuttle service across town is not what it used to be.

*Everyone's a Wally* is produced for the 48K

Spectrum by Mikrogen, 44 The Broadway, Bracknell, Berkshire.

**Price: £6.95**  
**Game type: Arcade adventure**  
**Rating: 88%**

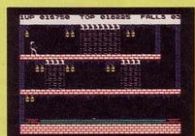
## BRUCE LEE

**F**ACE THE NINJA! Battle against the Green yamo! Avoid exploding t'sung-lin! Who are you? Why, **Bruce Lee**, of course.

The moves that you can make in this game are spectacular. Leap over your opponents' head. Take a running jump and crash both feet into their chin. Deliver a repeated series of punches and watch

them crumple to the floor and vanish.

Your aim is to claim infinite wealth and the secret of immortality from the wizard who dwells within a fortress. On each screen you must hit either all, or a select few of the lanterns you can see, to reveal the exit. Each screen is a little harder than the previous one, and you must be prepared for bushes to explode beneath your feet, particle lifts to carry you into the air, or force



fields to blast you to ashes.

The good news is that these problems are likely to affect your slow moving enemies even more than they do you. The bad news is that, on some of the later screens, this makes next

to no difference.

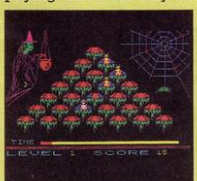
Bruce Lee is a very polished version of the ladders-and-levels type of game. The movements, although not the sound effects, do manage to capture, to some extent, the excitement of Lee's films. Great.

Bruce Lee is distributed by US Gold, Unit 24, Tipton Trading Est, Tipton, West Mids.

**Price: £7.95**  
**Game type: Arcade**  
**Rating: 75%**

## SOFT AID

**T**HERE ARE some excellent games available on the *Soft Aid* cassette, and it is worth paying £4.99 for any of



the ten games on offer when you know that your money will go to help Ethiopia.

The ten games included in the spectrum *Soft-Aid* cassette are: *Spellbound*, *Starbike*, *Kokotini Wilf*, *The Pyramid*, *Horace goes Skiing*, *Gilligan's Gold*, *Ant Attack*, *3D Tank Duel*, *Jack & The Beanstalk* and *Sorcery*.

One or two dud games in that list, but they are more than counterbalanced by the good games. *The Pyramid* from Fantasy, for example, is a first-class arcade game which is no longer on sale.

But it is wrong to single out any of these games out for particular praise. They have all been top games, each one of them successful in their own right. Whether you have seen them before and want to

replay them, or whether you have only just bought a computer and have so far missed these games it is worth buying *Soft Aid*.

This cassette probably represents the best value in the market at the moment. It deserves to go straight into the charts at number one.

All money raised by *Soft Aid* will go to the Bob Geldof Band-Aid Ethiopian Appeal Fund.

**Price: £4.99**

# COMBAT LYNX

From **DURELL**  
(Technical Support from  
Westland Helicopters)



**SPECTRUM 48k - COMMODORE 64 - BBC - AMSTRAD (soon)**



**SPECTRUM**



**COMMODORE 64**

**DURELL** sales dept.,  
Castle Lodge, Castle Green, Taunton, Somerset, TA1 4AB



## SAM STOAT

**G**REMLIN Graphics' games. You either love them or you hate them. Nobody at Sinclair Programs loves them, but we may be unusual.

**Sam Stoa Safe Breaker** resembles **Monty is Innocent** in many ways and, if you liked one, you are likely to enjoy the other.

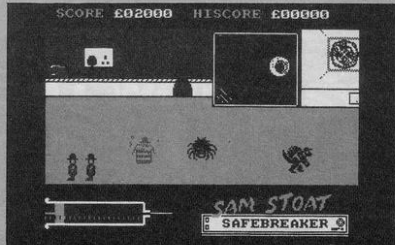
Sam Stoa is trying to break into a series of houses, to rob the owners of all their valuables. To do so, he must find the bomb in each house and take it to the safe, find the match in each house and take it to the safe, break into the safe,

steal the diamond which it contains and then escape.

Each of the screens is littered with the bizarre wandering enemies in which Gremlin specialises. Contact with any of these enemies will sap your energy.

The graphics for each screen are well drawn. In one room Sam must creep past the owner of the house or, at least, past his big toe, which is sticking out of the bath. Movement between series of rooms is done through mouseholes.

As usual, though, it is the flickering graphics



which make this game an eye-straining problem to play. As the enemies move around, the background behind them takes on their colours. With six characters zooming around a room at once, you have to have good eye sight, a well-adjusted TV set,

and a strong stomach to be able to watch the game.

Sam Stoa is produced for the 48K Spectrum by Gremlin Graphics, 10 Carver Street, Sheffield.

**Price: £6.95**

**Game type: Arcade**

**Rating: 35%**

## ALIEN 8

**A**LIEN 8 is, in every way, the follow up to **Knight Lore**. If you have played **Knight Lore**, you will know, almost immediately, exactly what is happening in **Alien 8**, and what to do.

The story line is complex, and well-explained. Your main aim is to move your robot around a space ship, col-

shells.

Movement is tricky, for moving three-dimensionally on a two-dimensional screen is a little difficult to grasp. Still, Ultimate make it as easy for you as they can, with a variety of movement options.

If you have never played **Knight Lore**, buy that before you buy **Alien 8**, for it is slightly easier. **Alien 8** requires absolute precision and split second timing. As the clockwork mice chase you, you cannot afford to stop to think half way across a room as the ground gives way underneath your feet.

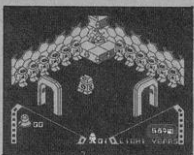
Although **Alien 8** has obvious similarities with **Knight Lore**, it is a completely different and much more difficult game.

**Alien 8** is produced by Ultimate, The Green, Ashby de la Zouch, Leicestershire.

**Price: £9.95**

**Game type: Arcade adventure**

**Rating: 93%**



lect various objects which have been stored in a variety of inaccessible places, and carry them to cauldrons which are waiting to receive them.

The graphics are like those in **Knight Lore**, perfectly drawn, fully three-dimensional rooms although, in **Alien 8**, they seem to have been constructed from egg boxes, and broken egg

## DRAGONTORC

**A**T LAST! The sequel to **Avalon**, the adventure movie, is on sale, and it is better, far better than **Avalon**.

**Dragontorc** sets you, as Maroc the wizard, to defeat Morag, the witch queen of the north. You must move your astral projection through a series of three dimensional rooms, find and employ a series of spells, map a route, utilise objects which you find on the way, defeat enemies and make friends.

Make friends? Yes, because each of the characters in the game reacts to you depending on their original characteristics and how you act towards them or others of their race. Skeletons are empty headed, and what brain remains to them tends to be full of death, so it probably saves time to kill them, rather than attempt friendship.

Elves, though, are friendly little chaps, if a trifle shy. If you avoid killing any of them, either on purpose or by mistake, and if you

try out a spot of trading with them, they will become friendly, and willing to help you in any way that they can.

A number of nice touches add to the computer movie effect of **Dragontorc**. The sound effects let you know what is happening, as far as is possible with the Spectrum. You can hear skeletons thudding around the room, or the elves skipping in. There are some surprises waiting for you too. Wait until you try unlocking one of the boxes. Yeeuch. Or, until you search the wrong skeleton. Aaagh.

**Dragontorc** is an excellent game. It makes a good film as well. Catch it on your local Spectrum. Produced by Hewson Consultants 60a St Mary's Street, Wallingford, Oxon.

**Price: £7.95**

**Game type: Arcade adventure**

**Rating: 85%**



# LOOK!

## NOW THERE ARE HI-RES PROGRAMS FOR THE 16K ZX-81

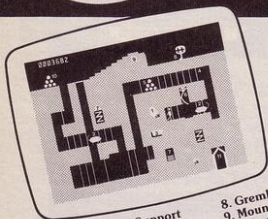
# 3

### FORTY NINER

In 1849 the Great American Gold Rush started. Almost everyone who could sold up everything and dashed to the west coast to look for this precious metal – including you!

You must excavate this precious metal – but can you survive the giant rats and that vicious Gremlin which will come to infest your mine? Can you trick the snakes into leaving their comfortable nests and destroy the rats for you? Can you keep the Gremlin at bay?

Riches await you – but so do the hazards!



1. Nuggets
2. Giant Rats
3. Burrowing Rat
4. Support
5. Cave In
6. Snake
7. Snake Nest
8. Gremlin
9. Mound
10. Pile of Earth
11. Cave

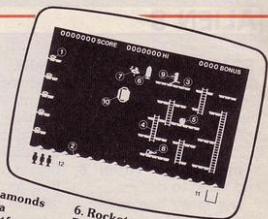
### ROCKET MAN

Get rich quick by collecting Diamonds that are simply lying there waiting for you! Oh... I forgot to mention that there are one or two problems!

There is an expanse of shark infested water between you and the Diamonds and a strange breed of Bubble that seems hell bent on getting you in it! Somehow you must cross it...

You have a Rocket Pack to help you (a Vulture on higher levels) but you must rush around the platforms and ladders collecting cans of fuel (legs of lamb with the Vulture) and cursing that weird Bubble. Once you have enough fuel then it's Chocks Away!

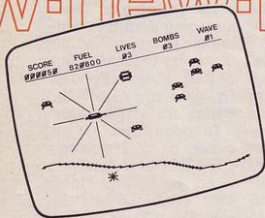
Oh... but don't run out of fuel on the way – otherwise it's... SPLASH!



1. Diamonds
2. Sea
3. Platforms
4. Ladders
5. Fuel Cans
6. Rocket
7. Vulture
8. Leg of Lamb
9. Player
10. Bubble
11. Fuel Gauge
12. Men remaining

### Z-XTRICATOR

A long time ago, in a galaxy far, far, away a terrible war took place between two hostile races. Any prisoners taken could not expect to live very long in the hands of their captors. Their only hope lay with a group of valiant warriors – the XTRICATORS – whose task it was to rescue fellow beings from the alien planet's surface. You are about to take on the role of such a warrior...



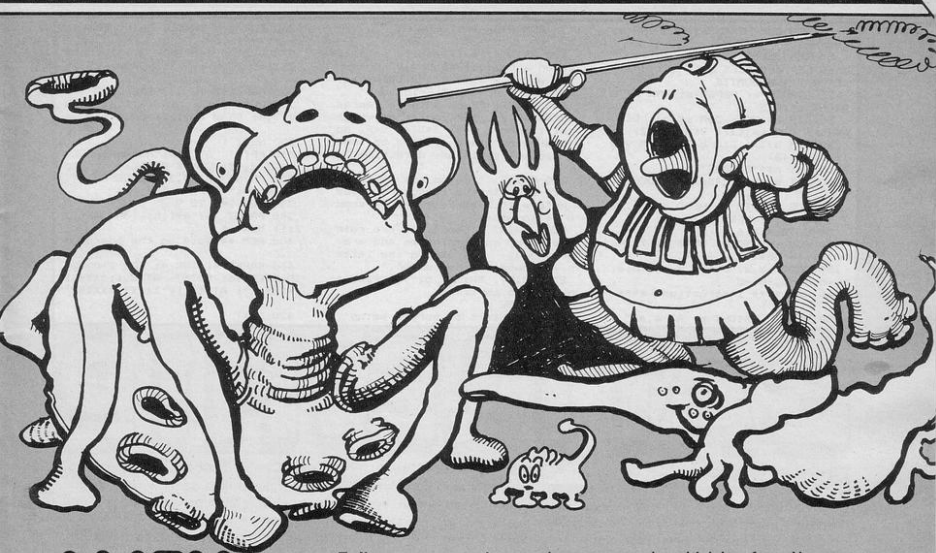
Please send me:

	QTY	TOTAL AMOUNT
FORTY NINER £5.95		
ROCKET MAN £5.95		
Z-XTRICATOR £5.95		
TOTAL		

Available from all good computer shops or send cheque/P.O. for £5.95 (inc. P&P) to:

**Software Farm,  
FREEPOST (No stamp required) (BS3658),  
BS8 2YY.**

Software Farm, 155 Whiteladies Road, Clifton, Bristol BS8 2RF.  
Telephone (0272) 731411. Telex 444742 AFMADV G



# ALIEN 10

**A**liens are appearing on the screen and multiplying fast. You can defend yourself by pressing O=left, P=right and Q=fire. Beware, if 10 aliens are on the screen at the same time you will be eliminated. Alien 10 has five levels of difficulty and has been written for the Spectrum by Adam Parker, Wolverhampton.

All underlined characters are to be entered in graphics mode.

u

```

6 PRINT AT 12,12; FLASH 1;"A
LEIN 10"
7 PAUSE 0
10 GO SUB 1000
20 GO SUB 1200
30 REM screen setup
35 BORDER 0
40 CLS : PRINT AT 20,2; PAPER
4;"
45 PRINT AT 21,2; PAPER 4;"
"
50 FOR s=1 TO 20
60 PLOT RND *254, RND *120+40
70 NEXT s
80 LET f1=0: LET 1=15
90 LET z=0: LET hits=0
100 REM aliens
110 POKE 23672,0
120 LET t= PEEK 23672
130 IF t >= 80-(a*6) THEN PRINT
T AT RND *17, RND *28+2; INK 2
;"A": LET z=z+1
140 IF z=10 THEN GO TO 400
150 PRINT AT 21,21;z
160 IF t >= 80-(a*6) THEN POKE
23672,0
200 REM lazer base
205 LET l=1+(INKEY$="p")-(IN
KEY$="o")
210 LET l=1+(l=0)-(l=30)
220 PRINT AT 19,1;"L": PAUSE
4
230 IF INKEY$="q" THEN GO TO
220
240 IF INKEY$ <> "q" THEN GO
TO 120
250 FOR c=18 TO 0 STEP -1
260 PRINT AT c,1+1;"D": PAUSE
2
270 PRINT AT c,1+1;" "

```

```

275 IF ATTR (c-1,1+1)=58 THEN
GO TO 300
280 NEXT c
290 GO TO 130
300 REM missile hit
310 BEEP .1,z*2
320 LET z=z-1: PRINT AT 21,2;
z
330 PRINT AT c-1,1+1; FLASH 1;
"E": PAUSE 50
340 PRINT AT c-1,1+1;" "
350 LET hits=hits+1
360 PRINT AT 21,3;"HITS=";hits
370 GO TO 130
400 PRINT AT 4,8; INK 0; FLASH
1;"YOU'VE BEEN ELIMINATED"
405 FOR s=30 TO -30 STEP -1: BE
EP .01; NEXT s
410 PRINT AT 12,3;"Do you want
another game y/n"
420 IF INKEY$="y" THEN GO TO
20
430 IF INKEY$="n" THEN PRINT
GOODBYE
"
440 GO TO 420
1000 FOR n=0 TO 7
1010 READ a: POKE USR "a"+n,a
1020 NEXT n
1030 DATA 126,126,219,126,60,60,
90,129
1040 FOR n=0 TO 7
1050 READ l: POKE USR "l"+n,l
1060 NEXT n
1070 DATA 24,24,24,24,60,126,255
,90
1080 FOR n=0 TO 7
1090 READ d: POKE USR "d"+n,d
1100 NEXT n

```

```

1110 DATA 16,16,16,16,16,16,58,4
0
1120 FOR n=0 TO 7
1130 READ e: POKE USR "e"+n,e
1140 NEXT n
1150 DATA 137,74,52,204,51,44,82
,145
1160 RETURN
1200 REM instructions
1210 PRINT AT 3,3;"YOU HAVE TO
DEFEND YOURSELF AGAINST THE A
TTACKING ALEINS THEY WILL RE-
ENERGISE OUT OF HYPERSPACE A
BOVE THE GROUND IT'S YOUR JO
B TO BLAST THE ALEINS OUT O
F THE UNIVERSE USING YOU LAS
ER BASE GOOD LUCK!"
1220 PRINT AT 16,3;"PRESS ANY K
EY TO CONTINUE"
1230 IF INKEY$=" " THEN GO TO
1250
1240 PAUSE 0
1250 CLS : PRINT AT 3,1;"YOU MO
VE YOU BASE WITH THE KEYS
P = LEFT
Q = FIRE
IF Y
PRES
ONCE
YOU WILL BE ELIMINATED"
1260 PRINT AT 13,2;"SELECT SKIL
L LEVEL FROM 1 TO 5"
1270 PRINT AT 15,2;"1=EASY 5=I
MPOSSABLE!!"
1280 LET a$=INKEY$
1290 INPUT "SKILL LEVEL=";"a$
1300 IF a$<"1" OR a$>"5" THEN
GO TO 1280
1310 LET a=VAL a$
1320 RETURN

```



```

10 REM COMPUTER BATTLESHIPS by
A. Pratt
50 REM Initialise variables
60 LET a=0: LET b=1: LET d=2:
LET e=7: RANDOMIZE
70 BORDER e: PAPER e: INK a: B
RIGHT a: CLS
80 DIM b$(20): DIM w$(b): DIM
n$(6): DIM i$(17): DIM j$(32)
90 DIM h(3): DIM g(3): DIM y(8
): DIM x(8)
100 LET n$="BDFFFE"
110 LET b$="0123456789ABCDEFHJ
I"
120 FOR i=b TO 3: READ h(i): LE
T g(i)=h(i): NEXT i
130 DATA 4,6,6
140 FOR i=b TO 8: READ y(i): RE
AD x(i): NEXT i
150 DATA -b,a,-b,b,a,b,b,b,a,
b,-b,a,-b,-b
160 REM *** Instructions ***
180 PRINT BRIGHT b: AT a,a;"

```

## COMPUTER BATTLESHIPS

```

190 PRINT "Battleships is play
ed on a board of 10 by 10 squares
on which are sited 1 Battleship,
2 Destroyers and 3 Frigates."
200 PRINT "Each ship is repre
sented by a horizontal or verti
cal line of 4*B, 3*D or 2*F. No
two ships are allowed to touc
h each other in any direction."

```

```

210 PRINT "The object is to lo
cate and sink the computers ships
before it sinks yours. A scor
e of 16 wins."
220 PRINT "Locations are refe
red to by co- ordinates and are
chosen by pressing the lette
r followed by the number."
230 PRINT BRIGHT b: " Press a
ny key to continue "
240 PAUSE a
250 REM Start of screen setup

```

```

260 FOR i=b TO 21: PRINT AT i,
a; j$: NEXT i
270 PLOT d,34: DRAW a,131: DRAW
251,a: DRAW a,-131: DRAW -251,a
280 FOR i=5 TO 133 STEP 128
290 PLOT i,37: DRAW a,125: DRAW
117,a: DRAW a,-125: DRAW -117,a
300 NEXT i
310 PRINT AT d,b:"HUMAN SCORE:
": AT d,17:"COMPS SCORE:"
320 PRINT AT 4,3:"ABCDEFHJIJ":
AT 4,19:"ABCDEFHJIJ"
330 FOR i=a TO 9
340 PRINT AT 6+i,b;i: AT 6+i,1
7;i: NEXT i
400 REM ** Sets up the boards **
410 PAPER 4: INK 4: FOR i=d TO
18 STEP 16: PRINT AT 5,i:"XXXXX
XXXXXX": AT 16,i:"XXXXXXXXXXXXX"
420 NEXT i

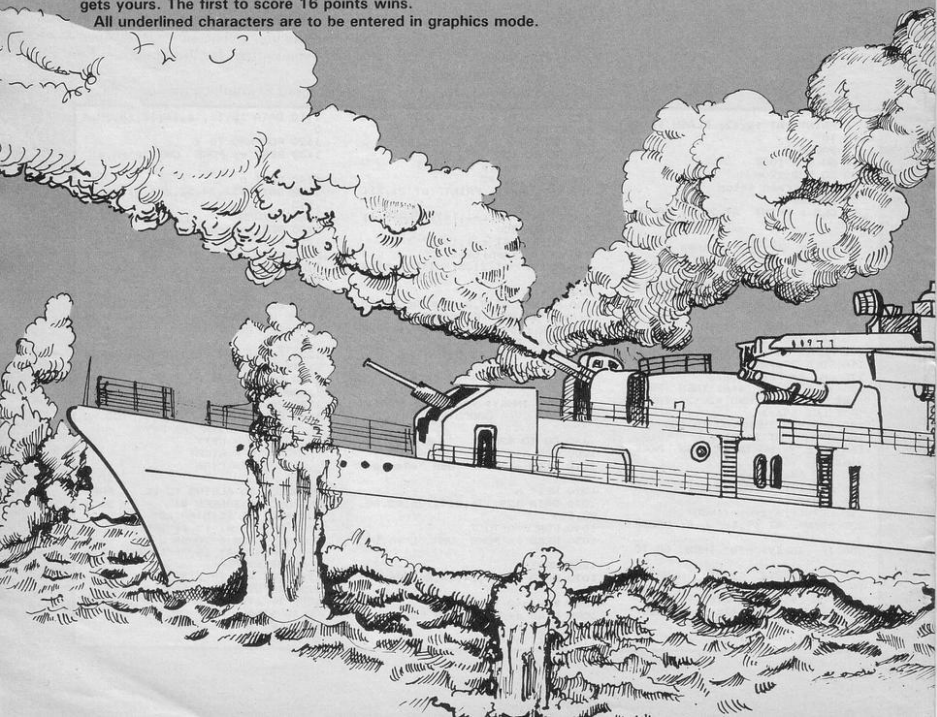
```

# BATTLESHIP

**P**it your wits against the computer in Battleship written by A. Pratt from Chelmsford for the Spectrum. Two boards are displayed on screen. Each contains a set of 10 by 10 square boxes each with a unique combination of numbers and letters. Play commences when you position your ships on your board and continues when you select the co-ordinates you think will uncover the computer's ships.

Neither you nor the computer can see the other's fleet, but you must locate and destroy its ships before it gets yours. The first to score 16 points wins.

All underlined characters are to be entered in graphics mode.



```

430 FOR i=6 TO 15
440 PRINT AT i,d;"X"; AT i,13;
"X"; AT i,18;"X"; AT i,29;"X"
450 FOR j=3 TO 12: LET k=(i+j)/
d
460 PRINT PAPER e; BRIGHT ((k-
INT (k)/2)*d); AT i,j; " "; AT i,j
+16; " "; NEXT j
470 NEXT i: PAPER e: INK a
600 REM *** Enter the ships ***

620 BRIGHT b
630 GO SUB 4000: GO SUB 5000
640 LET dir=a: LET max=a: LET r
last=a: LET clast=a: LET h=a: LE
T g=a: GO SUB 990
650 IF RND <.5 THEN GO TO 830
800 REM *** Main game loop ***

810 GO SUB 1000: REM Human move

820 IF h=16 THEN GO SUB 8000:

```

```

PRINT AT 19,a;"Human won ";h;"
to ";g: STOP
830 GO SUB 2000: REM Comps move

840 IF g=16 THEN GO SUB 8000:
PRINT AT 19,a;"Computer won ";g
"; "to ";h: STOP
850 GO TO 810
980 REM *** Score update ***

990 PRINT AT d,13,h; AT d,29,g
: RETURN
1000 REM *** Humans move ***

1010 LET j=b-b*(g(b)<3)-b*(g(d)<
5)-b*(g(d)<3)-b*(g(3)<5)-b*(g(3)
<4)
1020 IF j<d THEN LET j=d
1030 GO SUB 8000: LET pos=b
1050 PRINT AT 18,a;"HUMAN has "
j;" moves. Enter co-ords"
1060 FOR k=b TO j: LET r=a: LET
c=a: LET pos=a+4
1090 PRINT AT 21,b;"Move Number
";k: FLASH b; AT 21,16;"?": PR
INT " ";
1100 GO SUB 7000: LET c=c+16
1160 PRINT AT 19,pos;b*(c-B);b*(
r-5); AT 21,a;j;
1170 IF ATTR (r,c)=87 THEN PRI
NT INK d; AT 20,pos;"Mad": GO T
O 1290
1180 LET w$= SCREEN# (r,c)
1200 IF w$=" " THEN GO SUB 6500
: GO TO 1270
1210 IF w$="B" THEN LET g(b)=g(
b)-b
1220 IF w$="D" THEN LET g(d)=g(
d)-b
1230 IF w$="F" THEN LET g(3)=g(
3)-b
1240 PRINT PAPER d; INK e; FLAS
H b; AT r,c;w$: PRINT AT 20,pos
;"*";w$;"*"
1250 GO SUB 6000
1260 LET h=h+b: GO SUB 990
1270 PRINT PAPER d; INK e; BRIG
HT b; AT r,c;w$:
1280 IF h=16 THEN RETURN
1290 NEXT k
1300 RETURN
1999 REM
2000 REM *** Computer's move ***

2010 LET j=b-b*(h(b)<3)-b*(h(d)<
5)-b*(h(d)<3)-b*(h(3)<5)-b*(h(3)
<4)
2020 IF j<d THEN LET j=d
2030 GO SUB 8000: LET pos=b
2040 PRINT AT 18,a;"COMPUTER ha
s ";j;" moves."
2050 LET r=rlast: LET c=clast
2060 FOR k=b TO j: LET pos=pos+4

2070 IF dir>a AND max>a THEN GO
TO 2000
2100 REM *** Random choice ***

```

```

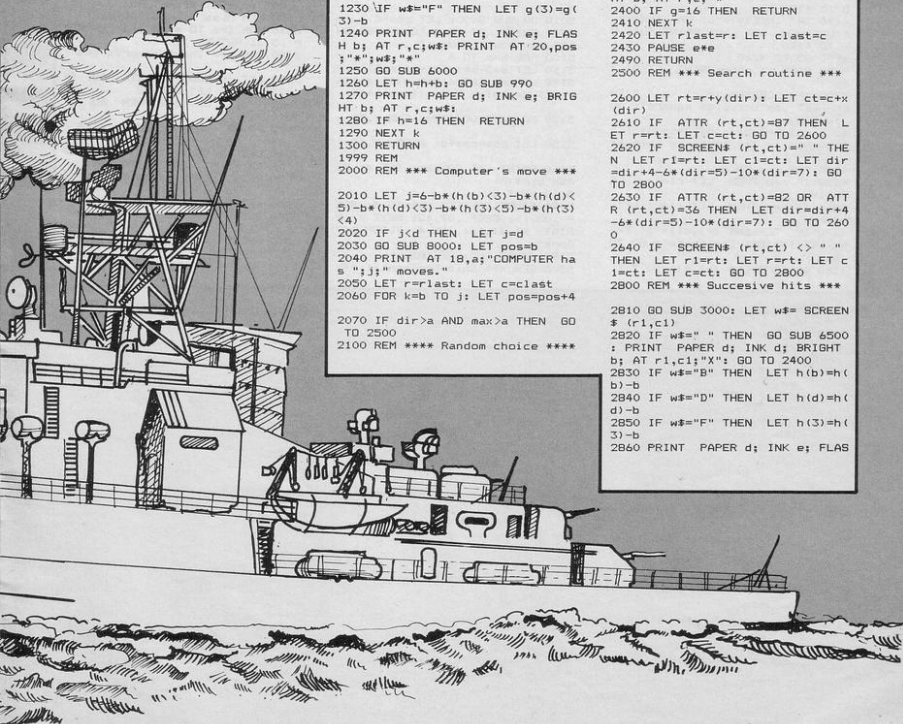
2110 LET r= INT (RND *10)+6: LE
T c= INT (RND *10)+3
2120 IF ATTR (r,c)=87 OR ATTR
(r,c)=82 THEN GO TO 2110
2150 REM Isolated square check

2160 LET v=a: FOR i=b TO 7 STEP
8
2170 LET attr= ATTR (r+y(i),c+x(
i))
2180 IF attr=87 OR attr=82 OR at
tr=36 THEN LET v=v+.25
2190 NEXT i: IF v=b THEN GO TO
2110
2200 REM *** Ship close check **
2210 LET v=a: FOR i=b TO 9
2220 IF ATTR (r+y(i),c+x(i))=87
THEN LET v=b
2230 NEXT i: IF v=b THEN GO TO
2110
2300 GO SUB 3000: LET w$= SCREEN
# (r,c)
2310 IF w$=" " THEN GO SUB 6500
: PRINT PAPER d; INK d; BRIGHT
b; AT r,c;"X": GO TO 2410
2320 IF w$="B" THEN LET h(b)=h(
b)-b: LET max=3
2330 IF w$="D" THEN LET h(d)=h(
d)-b: LET max=d
2340 IF w$="F" THEN LET h(3)=h(
3)-b: LET max=5
2350 PRINT PAPER d; INK e; FLAS
H b; AT r,c;w$: PRINT AT 20,pos
;"*";w$;"*"
2360 GO SUB 6000
2370 LET g=b+b: GO SUB 990
2380 LET dir=b+d*(RND <.5)
2390 PRINT PAPER d; INK e; BRIG
HT b; AT r,c;"X"
2400 IF g=16 THEN RETURN
2410 NEXT k
2420 LET rlast=r: LET clast=c
2430 PAUSE e*6
2490 RETURN
2500 REM *** Search routine ***

2600 LET rt=r+y(dir): LET ct=c+x
(dir)
2610 IF ATTR (rt,ct)=87 THEN L
ET r=rt: LET c=ct: GO TO 2600
2620 IF SCREEN# (rt,ct)=" " THE
N LET rlast=rt: LET clast=ct: LET
dir=4+6*(dir=5)-10*(dir=7): GO
TO 2800
2630 IF ATTR (rt,ct)=82 OR ATT
R (rt,ct)=36 THEN LET dir=dir+4
-6*(dir=5)-10*(dir=7): GO TO 260
0
2640 IF SCREEN# (rt,ct) < " "
THEN LET rlast=rt: LET rrt=rt: LET
c=ct: LET c=ct: GO TO 2800
2800 REM *** Successive hits ***

2810 GO SUB 3000: LET w$= SCREEN
# (r1,c1)
2820 IF w$=" " THEN GO SUB 6500
: PRINT PAPER d; INK d; BRIGHT
b; AT r1,c1;"X": GO TO 2400
2830 IF w$="B" THEN LET h(b)=h(
b)-b
2840 IF w$="D" THEN LET h(d)=h(
d)-b
2850 IF w$="F" THEN LET h(3)=h(
3)-b
2860 PRINT PAPER d; INK e; FLAS

```



```

H b; AT r1,c1:w$; PRINT AT 20,p
os;w$;"*";
2870 GO SUB 6000
2880 LET g=g+b; LET max=max-b; G
O SUB 790
2890 IF max=a THEN LET dir=a
2900 PRINT PAPER d; INK e; BRIG
HT b; AT r1,c1;"*";
2920 GO TO 2400
3000 PRINT AT 19,pos;b#(c+8);b#
(r-5); PAUSE 30; RETURN
4000 REM *** Human's Ships ***

4010 GO SUB 8000; LET pos=8; LET
Bad=4700
4020 PRINT AT 18,a;"HUMAN SHIPS
: Enter start co-ords A-J , 0-9
, R - Right or U - Up"
4025 PRINT AT 20,9; PAPER 5;"
"
4030 FOR n=b TO 6
4035 PRINT AT 21,a;j$; PAUSE e*
e
4040 LET r=a; LET c=a; LET z=a;
LET x=5
4050 IF n=b THEN PRINT AT 21,a
;"Battleship (4 squares) ";
4060 IF n=d OR n=3 THEN PRINT
AT 21,a;"Destroyer "+STR$(n-b)
+" (3 squares) ";
4070 IF n>3 THEN PRINT AT 21,a
;"Frigate "+STR$(n-3)+" (2 squ
ares) ";
4080 PRINT AT 21,26; FLASH b;"?
"; PRINT " ";
4100 GO SUB 7000
4160 IF INKEY$="r" OR INKEY$
="R" THEN LET z=b; PRINT "R": G
O TO 4190
4170 IF INKEY$="u" OR INKEY$
="U" THEN LET z=d; PRINT "U": G
O TO 4190
4180 GO TO 4160
4190 BEEP 1,e+b; PRINT AT 21,2
6;" "
4200 IF SCREEN$(r,c) <> " " TH
EN LET i$="Occupied square": GO
TO Bad
4210 LET m=3-b*(n-b)-b*(n-3)
4230 REM ** Try to place ship **

4240 FOR x=a TO m
4250 IF z=b THEN LET c1=c+x; LE
T r1=r
4260 IF z=d THEN LET c1=c; LET
r1=r-x
4270 IF SCREEN$(r1,c1)="X" THE
N LET i$="Off the board": GO TO
Bad
4280 IF SCREEN$(r1,c1) <> " "

```

```

THEN LET i$="Overlaps another":
GO TO Bad
4290 REM ** Check neighbours **

4300 LET v=a; FOR j=-b TO b: FOR
j=-b TO b
4310 IF SCREEN$(r1+j,c1+k) <>
" " THEN IF SCREEN$(r1+j,c1+k)
) <> "X" THEN LET v=b
4320 NEXT k: NEXT j
4330 IF v=b THEN LET i$="Too cl
ose": GO TO Bad
4340 NEXT x
4350 REM *** Place ship ***
4360 FOR x=a TO m
4370 IF z=b THEN LET c1=c+x; LE
T r1=r
4380 IF z=d THEN LET c1=c; LET
r1=r-x
4390 PRINT AT r1,c1; INK b;n$(n)
"
4400 NEXT x
4410 LET pos=pos+d
4420 PRINT AT 20,pos; PAPER 5;
INK b;n$(n)
4430 NEXT n
4440 FOR x=1 TO 100; NEXT x: RET
URN
4700 REM Invalid routine
4710 PRINT AT 21,a; INK e; PAPE
R d;i$; Try again " : FOR f=
1 TO 3: BEEP .05,3: BEEP .05,12:
BEEP .05,3: BEEP .05,12: NEXT f
4720 FOR f=b TO 100; NEXT f: PRI
NT AT 21,a;j$
4730 GO TO 4040
5000 REM ** Computer's Ships **

5010 GO SUB 8000; LET pos=8
5020 PRINT AT 18,a;"COMPUTER SH
IPS now positioned:"
5100 FOR n=b TO 6
5110 LET m=3-b*(n-b)-b*(n-3)
5120 LET r=INT (RND*(11-m))+6
: LET c=INT (RND*(11-m))+19
5130 GO TO 5200+100*(RND<.5)

5150 LET pos=pos+d; BEEP .2,12

5160 PRINT AT 20,pos; INK d; FL
ASH b;n$(n)
5170 NEXT n
5180 PAUSE 20; FOR x=b TO 4: BEE
P .05,15; BEEP .07,12; NEXT x: P
RINT AT 21,14; INK 4; FLASH b;"
Done"
5190 PAUSE 200; RETURN
5200 REM *** Ship horizontal ***

```

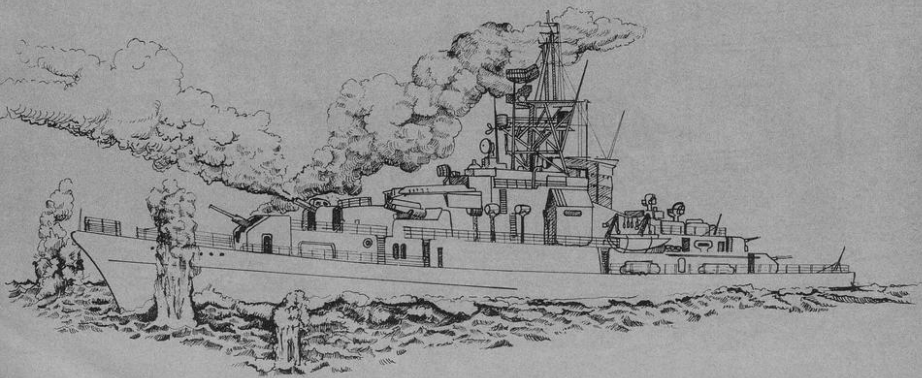
```

5210 LET r1=r; FOR x=a TO m: LET
c1=c+x
5220 IF SCREEN$(r1,c1) <> " "
THEN GO TO 5110
5230 GO SUB 5400: IF v THEN GO
TO 5110
5240 NEXT x
5250 FOR x=a TO m: LET k=(r+c+x)
/2
5260 PRINT AT r,c+x; INK e; BRI
GHT ((k-INT k)*d);n$(n)
5270 NEXT x
5290 GO TO 5150
5300 REM *** Ship vertical ***
5310 LET c1=c; FOR x=a TO m: LET
r1=r+x
5320 IF SCREEN$(r1,c1) <> " "
THEN GO TO 5110
5330 GO SUB 5400: IF v THEN GO
TO 5110
5340 NEXT x
5350 FOR x=a TO m: LET k=(r+c+x)
/2
5360 PRINT AT r+x,c; INK e; BRI
GHT ((k-INT k)*d);n$(n)
5370 NEXT x
5390 GO TO 5150
5400 REM Check comp's neighbours
5410 LET v=a; FOR j=-b TO b: FOR
k=-b TO b
5420 IF SCREEN$(r1+j,c1+k) <>
" " THEN IF SCREEN$(r1+j,c1+k)
) <> "X" THEN LET v=b
5430 NEXT k: NEXT j: RETURN
6000 REM Hit ship - sound effect

6010 FOR i=e TO a STEP -.1: BEEP
.005,i: NEXT i: RETURN
6500 REM Miss - sound effect
6510 FOR i=a TO e: NEXT i: BEE
P .3,3: RETURN
7000 REM *** Input co-ords ***

7010 LET c=CODE INKEY$-62; IF
c>34 THEN LET c=c-32
7020 IF c<3 OR c>12 THEN GO TO
7010
7030 PRINT CHR$(c+62); BEEP .
1,e-b
7040 LET r=CODE INKEY$-42; IF
r<6 OR r>15 THEN GO TO 7040
7050 PRINT CHR$(r+42); BEEP .
1,e
7060 RETURN
8000 REM * Clear bottom lines *
8010 PRINT AT 18,a;j$;j$;j$;j$;
RETURN
9999 SAVE "BTSHP$": STOP

```





```

5 GO SUB 9000
10 CLS
20 PRINT AT 10,8;"A A A A A A"
A A"
25 INK 0
30 PRINT AT 11,7;"(17*igB)"
40 PRINT AT 12,7;"(17*igB)"
50 PRINT AT 13,7;"(17*igB)"
55 INK 7
60 PRINT AT 14,8;"B B B B B B"
B B"
70 FOR a=0 TO 9: FOR b=B TO 22
STEP 2
80 PRINT AT a,b;"C"
90 NEXT b
100 NEXT a
105 LET score=0: LET energy=3
110 FOR a=15 TO 21: FOR b=B TO 22
STEP 2
120 PRINT AT a,b;"C"
130 NEXT b: NEXT a
140 LET a=9: LET b=16
150 LET x=0: LET y=INT ( RND
*B)+1
155 PRINT AT 21,1: PAPER 2: IN
K 7;"SCORE=": PRINT AT 21,22: I
NK 7: PAPER 2:"ENERGY=":energy
160 PRINT AT a,b: INK 6: BRIGH
T 1;"E"
165 IF y=1 THEN LET y=B

```

```

166 IF y=2 THEN LET y=10
167 IF y=3 THEN LET y=12
168 IF y=4 THEN LET y=14
169 IF y=5 THEN LET y=16
170 IF y=6 THEN LET y=18
171 IF y=7 THEN LET y=20
172 IF y=8 THEN LET y=22
179 PRINT AT x,y: INK 2: PAPER
7: FLASH 1:"D"
180 PRINT AT x-1,y;"C"
190 LET x=x+1
200 IF x=10 THEN GO SUB 1000
210 IF INKEY$="1" OR INKEY$
="2" OR INKEY$="0" THEN GO SU
B 2000
220 GO TO 160
1000 BEEP .1,-20: LET energy=ene
rgy-1
1010 IF energy=0 THEN GO TO 800
0
1020 PRINT AT x-1,y;"C"
1030 GO TO 150
2000 IF INKEY$="1" AND b>B THE
N LET b=b-2: PRINT AT a,b+2;"C"
"
2010 IF INKEY$="2" AND b<22 TH
EN LET b=b+2: PRINT AT a,b-2;"
C"
2020 IF INKEY$="0" THEN GO SU
B 3000
B 3000
2030 RETURN
3000 BEEP .01,50: IF b=y THEN B
EEP .01,5: PRINT AT x-1,y: INK

```

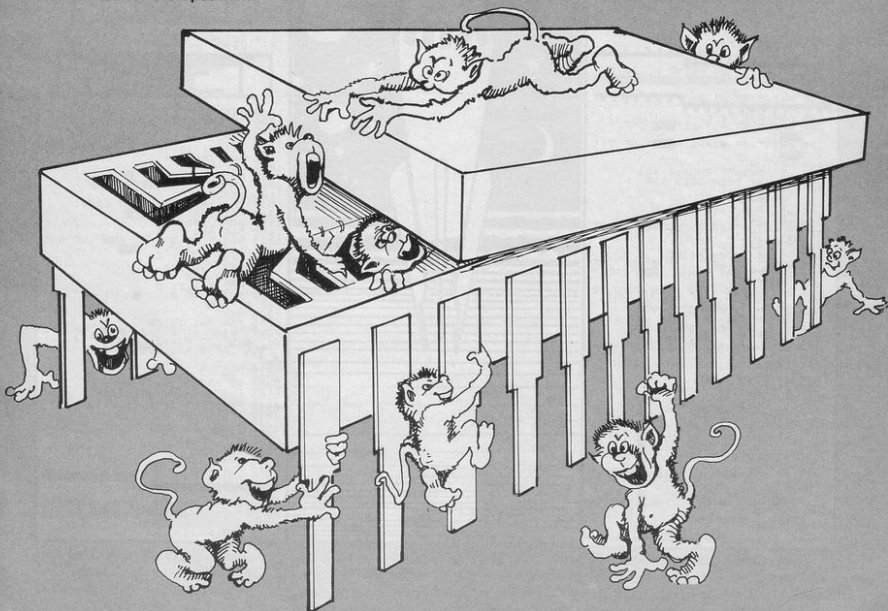
```

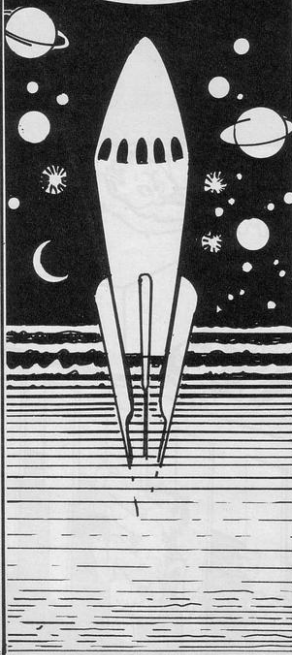
7;"C": LET score=score+10: LET x
=0: LET y=INT ( RND *5)+1
3005 PRINT AT 21,7: PAPER 2: IN
K 7:score
3010 RETURN
8000 CLS : PRINT AT 1,10: FLASH
1:"You scored ":score
8030 FOR a=0 TO 20: BEEP .01, RN
D *20: NEXT a: PRINT AT 10,2:
FLASH 1:"Press any key to start
again"
8040 PAUSE 0
8050 RUN 6
9000 FOR a= USR "a" TO USR "e"
+7
9010 READ b: POKE a,b
9020 NEXT a
9025 BORDER 4: PAPER 1: INK 7: C
LS
9030 DATA 24,24,24,24,255,129,12
9,129,129,129,129,255,24,24,24,2
4
9040 DATA 24,24,24,24,24,24,24,2
4,90,153,90,153,90,153,90,153
9050 DATA 90,90,219,219,219,219,
124,60
9055 PRINT AT 2,11: FLASH 1:"CH
IP RAID"
9056 PRINT AT 5,9: PAPER 7: INK
2:"By S.WHITE 1985"
9060 PRINT AT 10,5:"Press any k
ey to start"
9070 PAUSE 0
9080 RETURN

```

**G**remlins are trying to get into your microchip and you must stop them. 0=fire, 1=left and 2=right. Underlined characters are to be entered in graphics mode. Chip Raid, by S White, Hampshire, was written for the Spectrum.

# GREMLINS





```

1450 FOR A=1 TO 192
1451 PRINT A$(A);
1452 NEXT A
1453 PR#USE 4E4
1454 IF L=5 THEN GOTO 5000
1455 GOTO 3000
1456 STOP
1457 PRINT AT 3,0;
1458
1459
1460
1461
1462
1463
1464
1465
1466
1467
1468
1469
1470
1471
1472
1473
1474
1475
1476
1477
1478
1479
1480
1481
1482
1483
1484
1485
1486
1487
1488
1489
1490
1491
1492
1493
1494
1495
1496
1497
1498
1499
1500
1501
1502
1503
1504
1505
1506
1507
1508
1509
1510
1511
1512
1513
1514
1515
1516
1517
1518
1519
1520
1521
1522
1523
1524
1525
1526
1527
1528
1529
1530
1531
1532
1533
1534
1535
1536
1537
1538
1539
1540
1541
1542
1543
1544
1545
1546
1547
1548
1549
1550
1551
1552
1553
1554
1555
1556
1557
1558
1559
1560
1561
1562
1563
1564
1565
1566
1567
1568
1569
1570
1571
1572
1573
1574
1575
1576
1577
1578
1579
1580
1581
1582
1583
1584
1585
1586
1587
1588
1589
1590
1591
1592
1593
1594
1595
1596
1597
1598
1599
1600
1601
1602
1603
1604
1605
1606
1607
1608
1609
1610
1611
1612
1613
1614
1615
1616
1617
1618
1619
1620
1621
1622
1623
1624
1625
1626
1627
1628
1629
1630
1631
1632
1633
1634
1635
1636
1637
1638
1639
1640
1641
1642
1643
1644
1645
1646
1647
1648
1649
1650
1651
1652
1653
1654
1655
1656
1657
1658
1659
1660
1661
1662
1663
1664
1665
1666
1667
1668
1669
1670
1671
1672
1673
1674
1675
1676
1677
1678
1679
1680
1681
1682
1683
1684
1685
1686
1687
1688
1689
1690
1691
1692
1693
1694
1695
1696
1697
1698
1699
1700
1701
1702
1703
1704
1705
1706
1707
1708
1709
1710
1711
1712
1713
1714
1715
1716
1717
1718
1719
1720
1721
1722
1723
1724
1725
1726
1727
1728
1729
1730
1731
1732
1733
1734
1735
1736
1737
1738
1739
1740
1741
1742
1743
1744
1745
1746
1747
1748
1749
1750
1751
1752
1753
1754
1755
1756
1757
1758
1759
1760
1761
1762
1763
1764
1765
1766
1767
1768
1769
1770
1771
1772
1773
1774
1775
1776
1777
1778
1779
1780
1781
1782
1783
1784
1785
1786
1787
1788
1789
1790
1791
1792
1793
1794
1795
1796
1797
1798
1799
1800
1801
1802
1803
1804
1805
1806
1807
1808
1809
1810
1811
1812
1813
1814
1815
1816
1817
1818
1819
1820
1821
1822
1823
1824
1825
1826
1827
1828
1829
1830
1831
1832
1833
1834
1835
1836
1837
1838
1839
1840
1841
1842
1843
1844
1845
1846
1847
1848
1849
1850
1851
1852
1853
1854
1855
1856
1857
1858
1859
1860
1861
1862
1863
1864
1865
1866
1867
1868
1869
1870
1871
1872
1873
1874
1875
1876
1877
1878
1879
1880
1881
1882
1883
1884
1885
1886
1887
1888
1889
1890
1891
1892
1893
1894
1895
1896
1897
1898
1899
1900
1901
1902
1903
1904
1905
1906
1907
1908
1909
1910
1911
1912
1913
1914
1915
1916
1917
1918
1919
1920
1921
1922
1923
1924
1925
1926
1927
1928
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938
1939
1940
1941
1942
1943
1944
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
1956
1957
1958
1959
1960
1961
1962
1963
1964
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
2039
2040
2041
2042
2043
2044
2045
2046
2047
2048
2049
2050
2051
2052
2053
2054
2055
2056
2057
2058
2059
2060
2061
2062
2063
2064
2065
2066
2067
2068
2069
2070
2071
2072
2073
2074
2075
2076
2077
2078
2079
2080
2081
2082
2083
2084
2085
2086
2087
2088
2089
2090
2091
2092
2093
2094
2095
2096
2097
2098
2099
2100
2101
2102
2103
2104
2105
2106
2107
2108
2109
2110
2111
2112
2113
2114
2115
2116
2117
2118
2119
2120
2121
2122
2123
2124
2125
2126
2127
2128
2129
2130
2131
2132
2133
2134
2135
2136
2137
2138
2139
2140
2141
2142
2143
2144
2145
2146
2147
2148
2149
2150
2151
2152
2153
2154
2155
2156
2157
2158
2159
2160
2161
2162
2163
2164
2165
2166
2167
2168
2169
2170
2171
2172
2173
2174
2175
2176
2177
2178
2179
2180
2181
2182
2183
2184
2185
2186
2187
2188
2189
2190
2191
2192
2193
2194
2195
2196
2197
2198
2199
2200
2201
2202
2203
2204
2205
2206
2207
2208
2209
2210
2211
2212
2213
2214
2215
2216
2217
2218
2219
2220
2221
2222
2223
2224
2225
2226
2227
2228
2229
2230
2231
2232
2233
2234
2235
2236
2237
2238
2239
2240
2241
2242
2243
2244
2245
2246
2247
2248
2249
2250
2251
2252
2253
2254
2255
2256
2257
225
```

**I**n the role of Galactic Space Highway Construction Engineer (Demolition Specialist) it is your aim to blast the hapless planet below you to smithereens in order to make way for a new Space Highway. Luckily for the planet, it has members of the Keep Our Galaxy Intact Federation to defend it. Pilot your ship through three game levels in order to destroy the planet, or be destroyed by the Federation.

Planet Destroyer was written for the 16K ZX-81 by P Sansom of Wisbech, Cambridgeshire.

```

3025 LET X=15
3030 PRINT AT 11,0;"",AT 19,0;" "
3035 FOR A=12 TO 18
3040 PRINT AT A,0;"",AT A,31;" "
3045 NEXT A
3050 FOR F=1 TO 84
3055 PRINT AT 15,X;"X";AT 20,31-
(F/2)
3060 PRINT AT 14,Y-3;"",AT 15,Y-1;" "
3065 Y=Y-2;"",AT 16,Y-5;"",AT 18,Y-5
"
3070 Y=Y-4;"",AT 18,Y-5
3105 IF X*Y=2 OR X*Y=2 THEN GOTO
3150
3150 PRINT AT 15,X;" "
3155 IF X*Y THEN LET S=S+10
3160 LET X=X+(INKEYS="2")-(INKEY
S="1")
3165 LET B=INT (RND*2)
3170 LET Y=Y+(B=0 AND Y<20)-(B=1
AND Y>10)
3200 NEXT F
3250 GOTO 400
3300 FOR A=1 TO 25
3305 PRINT AT 15,X;"X";AT 15,X;"
X";AT 15,X;" "
3310 NEXT A
3315 LET L=L+1
3320 IF L>20 THEN GOTO 3000
3325 PRINT AT 0,10;"GAME OVER";
AT 2,10;"SCORE = ";S
3330 STOP
3335 LET X=15
3340 LET L=INT (RND*25)+10
3345 FOR B=1 TO L
3350 FOR A=0 TO 2
3355 GOSUB 3000+(A+100)
3360 PRINT AT 4,X-1;" "
3365 LET X=X+(INKEYS="2")-(INKEY
S="1")
3370 IF X<0 OR X>22 THEN GOTO 20
3375 NEXT A
3380 NEXT B
3385 PRINT AT 7,X-1;" "
3390 FOR A=1 TO 5
3395 NEXT A
3400 PRINT AT 7,X-2;"",AT 8

```

```

X;" "
3405 FOR A=1 TO 5
3410 IF INKEYS="5" THEN GOTO 800
3415 NEXT A
3420 PRINT AT 7,X-2;"",AT 8
X;" "
3425 CLS
3430 PRINT AT 10,1;"YOU HAVE MIS
SED, YOU REAPPROACH"
3435 PAUSE 4E4
3440 CLS
3445 GOTO 40
3450 FOR A=5 TO 8
3455 PRINT AT A,X;"",AT A,X;" "
3460 FOR S=1 TO 2
3465 NEXT S
3470 NEXT A
3475 FOR A=1 TO 10
3480 NEXT A
3485 FOR A=1 TO 50
3490 NEXT A
3495 CLS
3500 LET S=S+1000
3505 PRINT AT 10,10;"SCORE = ";S
3510 PRINT AT 20,12;"YOU NOW ATTA
CK ANOTHER PLANET"
3515 PAUSE 4E4
3520 CLS
3525 GOTO 40
3530 PRINT "PLANET DESTROYER"
3535 PRINT AT 3,0;"YOU MUST PILO
T YOUR SHIP THROUGH THREE
LEVELS TO ULTIMATELY BO
MB THE PLANET."
3540 PRINT
3545 PRINT "STEER YOUR SHIP WITH
1 AND 2 AND FIRE WITH 0 ONCE YOU
HAVE FIRED YOU CAN STEER YOUR M
ISSILES BUT HAND YOU DONT CRASH
UNTIL THE WALLS."
3550 PRINT
3555 PRINT "THE GAGE AT THE BOTT
OM SHOWS THE TIME REMAINING ON TH
AT LEVEL."
3560 PRINT AT 20,10;"5000 LUCK"
3565 PAUSE 4E4
3570 CLS
3575 RETURN
3580 SAVE "DEATHSTAR"
3585 RUN

```



# 3 in a row

Written for the 16K ZX-81 by Glenn and Paul Jones of Kingsthorpe, Northampton, Three In a Row is a strategy game for two players. Compete to form as many rows of three counters as possible within the six by six game grid.

The game is played over four rounds, and the computer takes 18 seconds to calculate the scoring rows.

```

1 REM #3-IN-A-ROW#
2 DIM R(16)
3 DIM H(16)
4 DIM U(16)
5 G=0
6 LET T=0
7 LET X=0
8 LET Y=0
9 IF U=0 THEN GOTO 30
10 GOSUB 5000
11 THEN GOTO 45
12 GOSUB 5000
13 U=1999
14 GOSUB 5000
15 LET C=1 TO 36
16 FOR A(C)=0
17 NEXT C
18 NEXT C
19 GOSUB 500
20 REM #FIRST PLAYER SELECTION#
21 IF U=1 THEN LET E=0-1
22 IF U=1 THEN LET E=0-1
23 FOR I=1 TO 36
24 IF E=0 THEN PRINT AT 5,1;" "
25 PLAY
26 IF E=1 THEN PRINT AT 5,1;" "
27 PLAY
28 REM #GAME BEGINS#
29 INPUT P
30 IF P<1 OR P>36 THEN GOTO 100
31 IF P<1 OR P>36 THEN LET U=0
32 IF E=0 THEN LET U=1
33 IF E=1 THEN LET U=0
34 PRINT AT M(P),N(P),U$
35 IF E=0 THEN LET R(P)=2
36 IF E=1 THEN LET R(P)=2
37 IF E=0 THEN GOTO 170
38 IF E=1 THEN GOTO 170

```

Continued on next page





```

1 PRINT "Who yer gonna call...
.....GHOSTBLASTERS!
....."By Michael Durkin"
2 BEEP .5,4: BEEP .15,2: BEEP
.5,4: PAUSE 50
3 OVER 1
4 BORDER 2: PAPER 0: INK 7: C
LS: BRIGHT 1
8 GO SUB 9000
10 FOR f=USR "a" TO USR "d"+
7: READ a: POKE f,a: NEXT f
20 DATA 3,15,27,49,59,63,63,57
192,240,216,140,220,252,252,220
24,12,0,0,0,0,0,0,204,102,0,0,0
0,0,0
30 LET sc=100: LET a=15: LET b
=10: LET ti=1000
32 GO SUB 1000
35 LET x=INT (RND *21): LET
y=30
37 IF sc<0 THEN GO TO 3000
40 PRINT AT b,a: OVER 0: " ":
LET a=a+(INKEY$="a")-(INKEY$=
1): LET b=b+(INKEY$="d")-(INKEY$
="b")
42 LET ti=ti-1: IF ti=0 THEN
GO TO 2800
45 IF INKEY$="1" THEN LET a=
a-1

```

The attic room is haunted. As chief Ghostblaster, can you train your sights on the ghosts and shoot them down before they escape through the door at the left of the room?

Written for the Spectrum or Spectrum Plus by Michael Durkin of Preston, Lancashire.

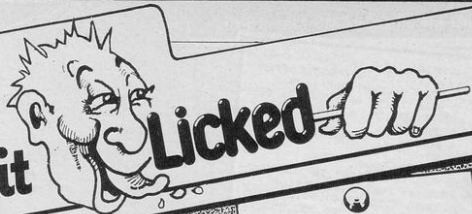
```

50 IF b<0 THEN LET b=0
60 IF a>30 THEN LET a=30
70 IF a<0 THEN LET a=0
80 IF b>21 THEN LET b=21
90 PRINT AT x,y: OVER 1:"AB":
AT x+1,y: OVER 1:"CD"
95 BEEP .005,x+y-10
100 PRINT AT b,a: OVER 0:"+"
110 IF INKEY$="f" AND b=5 AND
a=y THEN FOR g=7 TO 0 STEP -1:
PRINT OVER 0: AT b,a: INK g:"AB"
": AT b+1,a: INK g:"CD": BEEP .0
5,g+30: NEXT g: LET sc=sc+(INT
(RND *200))+100: LET p=0: CLS:
GO SUB 1000: GO TO 35
120 IF INKEY$="f" AND b<>x A
ND a<>y THEN BEEP .01,.5
140 PRINT #0: AT 0,0: FLASH 1:
GHOSTBLASTERS"
150 PRINT AT x,y: OVER 1:"AB":
AT x+1,y: OVER 1:"CD": LET y=y-
1
160 IF y=0 THEN CLS: LET sc=sc
-10: GO SUB 1000: GO TO 35
170 PRINT #0: AT 0,15:"CASH:";
CL#0: AT 1,10:"TIME:";
175 LET v=INT (RND *100): IF
v>50 THEN LET v=0
177 IF v<25 AND v>0 THEN LET v
=1
178 IF v>= 25 AND v<= 50 THEN
LET v=1
180 LET x=y+v: IF x<0 THEN LET
x=0
190 IF x>20 THEN LET x=20
200 GO TO 40
155,0: DRAW 0,75: DRAW -155,0: D
RAW 0,-75: PLOT 255,0: DRAW -50,-50:
50: PLOT 255,175: DRAW -50,-50
PLOT 0,175: DRAW 50,-50
1010 INK 5: PLOT 10,10: DRAW 0,1
00: DRAW 20,-5: PLOT 150,100:
24,75: DRAW 4,0: PLOT 150,100:
DRAW 30,0: DRAW 0,-30: DRAW -30,
0: DRAW 0,30: INK 7: RETURN
2800 IF sc>= sk THEN GO TO 700
0
2805 CLS: PRINT FLASH 1: AT 10
10:"GAME OVER": AT 12,3:"TIME U
P AND YOU DIDNT EARN!" AT 14,9:"
ENOUGH CASH": GO TO 9500
3000 CLS: PRINT FLASH 1: AT 10
10:"GAME OVER": AT 12,6:"YOU'RE
OUT OF CASH!"
3010 GO TO 9500
7000 CLS: PRINT "YOU MADE SUFFI
CIENT CASH. WELL DONE!"
9000 INPUT "KEYS:LEFT ? ":"1:"
9010 INPUT "RIGHT ? ":"r:"
9020 INPUT "UP ? ":"u:"
9030 INPUT "DOWN ? ":"d:"
9040 INPUT "FIRE ? ":"f:"
9045 INPUT "SKILL LEVEL (1-10) ":"
sk: IF sk<1 OR sk>10 THEN GO TO
9500
9050 LET sk=sk*1000: RETURN
9500 BEEP .5,4: BEEP .5,1: BEEP
.2,5: BEEP .5,4: BEEP .4,1
9510 PRINT #0, AT 1,0:"Another g
ame? eh? (Y/N): FOR k=0 TO 50:
NEXT k
9520 IF INKEY$="y" THEN RUN
9530 IF INKEY$="n" THEN GO TO
9550
9540 GO TO 9520
9550 CLS: PRINT "Sure?(Y/N)":": B
EEP .5,-20
9560 IF INKEY$="y" THEN RANDO
MIZE USR 0
9570 IF INKEY$="n" THEN GO TO
9510
9580 GO TO 9560

```

# GHOSTBLASTERS

# You've got it



**C**heat at *Cavelon* by starting the game and then pressing down as many keys as you can at the same time. This is best done by placing a book on the keyboard and then pressing down upon it. "HI CHRIS WHAT SHALL I DO" will then be printed on screen. Press a key 1 to 6 to choose the sheet on which you wish to start the next game.

Paul Howarth,  
Skelmersdale, Lancs.

**D**isable the *BREAK* key on a mark 3 Spectrum by entering *POKE 23613,82* at the start of a program. To make the computer crash when the *BREAK* key is pressed, enter *23613,0* at the beginning of a program.

Mrs T Burke,  
Scrafield, Lincs.

**T**his short Basic program will provide infinite lives on some versions of *Underwilde* from Ultimate. Enter it, and then run the tape.

10 LOAD "" CODE  
20 LOAD "" CODE  
30 POKE 23314,201  
40 RANDOMISE USR  
23300  
50 POKE 59377,0  
60 RANDOMISE USR  
26610

João Prospero,  
Lisbon, Portugal.

**G**ain infinite lives in *Sabre Wolf* from Ultimate. Load the first section of the program, press break and stop the tape. Type in: *POKE 23756,1: CLEAR 65536*. Edit the line and move the cursor to the end and delete the following: *PRINT USR 23424*. Add line 10 with either of these two pokes: *POKE 43575,255* for infinite lives with one player, or *POKE 45520,255* for infinite lives with two players.

Gregory Cawthorn,  
Letchworth, Herts.

**T**o reach the B.P. can in *Pyjamarama*: collect the empty water bucket, take it to the bathroom and pass under the tap. Your bucket will now be full. Take the bucket to the room with the B.P. can, and you will find that it is now safe to pass the snappers. To fill the B.P. can, take it to the fuel dispenser.

Jason Humphries,  
Coventry.

**O**btain infinite lives on *Lunar Jetman* from Ultimate by adding this to the loader program:

10 CLEAR 24575: PAPER  
7: INK 0: BORDER 0: CLS  
20 FOR L=1 TO 5: PRINT  
AT 6,0: LOAD "" CODE:  
NEXT L  
30 POKE 23439,201:  
POKE 36965,0: RANDO-  
MISE USR 32768

Thomas Hindson,  
Oldham, Manchester.

**Z**X-81 owners will be less familiar with the end-listing procedure which occurs in machine code programs when the *NEWLINE* is pressed and the first line overfills the screen. *POKE 16513,118* to prevent this happening.

Paul Lockett,  
Northwich, Cheshire.

**T**o escape from the goblins' dungeon in *The Hobbit* from Melbourne House, say to Thorin "open window", and repeat this until he does so. Then say "carry me" and then say "go". He should then carry you out of the dungeon.

To cross the black river say "Throw rope across" and carry on throwing until the rope lands in a boat. Then pull the rope and climb into the boat.

Christopher Ryan,  
Euxton, Lancs.





# Pen-friends

**James White**, 27 River Valley Road, Chudleigh Knighton, South Devon would like to find a pen pal outside the Devon area who also owns a Spectrum, and who would be interested in swapping program listings. He would be interested to hear from anyone who has been reading *Sinclair Programs* since before March 1984.

**Computer Pen-Pal Club**, 1 Constellation Street, Adamsdown, Cardiff CF2 1HJ are just starting up. They hope to be able to arrange contacts between computer users, particularly Sinclair users. If you are interested, send a stamped addressed envelope, together with your age, computer, telephone number, and any other relevant details.

**Andrew Hales**, 26 Queens Annes Drive, Westcliff-on-Sea, Essex owns a ZX-81 and would like to find a penfriend in the Essex area. He is interested in swapping ZX-81 games and ideas.

**Jonathan Roberts**, 5 Troed-y-Bwch, De-ganwy, Gynedd, North Wales would like a penpal from the York area who owns a Spectrum, preferably a 48K Spectrum.

**Martin Garthwaite**, 127 Dringthorpe Road, Dringhouse, York, is eleven years old. He is looking for a penfriend who is interested in Spectrum software such as *Atic Atac* and *Ghostbusters*, and who knows codes for infinite lives in such games. He would also be pleased to swap program listings.



**Savasan Yurtsever**, Mimarlar ap 6/6, A. Eg-lence, Etlik, Ankara, Turkey has owned a 48K Spectrum for five months and has already written several programs for it. He would like to hear from anyone in search of a penfriend.

**Paul Birch**, Treetops, Whitby, Ellesmere Port, L65 6QT owns a 16K ZX-81. He would like to find a ZX-81 owning penpal who lives in the Cheshire area.

**Simon Brodbeck**, Wild Carr Barn, Cressingham, Lancaster, Lancashire feels that the ZX-81 is a very useful machine and that it is treated unfairly both by the general public and by software companies. He would like to hear from other people who think the same way, in order to exchange programs and tips.

**Stuart Bain**, 1 Trenowin Mews, 31 Chancellor Avenue, Durban, South Africa is 14 years old and is looking for a Spectrum owning pen-friend about the same age as himself. He would be willing to swap advice, news, tips and programs. His favourite games are *Sabre* and *Lords of Midnight*.

# Questline

## Urban Upstart from Richard Shepherd

**Cathy Foot made the grave mistake of leaving sunny Hampstead for the wilds of Scarthorpe. Will she ever escape?**

"HAD bovver wiv dog the other day — lost! Said Yeah man, you get out this hole. So I tell me, split this dump, which bug me more than I thought. Decide I leave this mong the town hall stuff fo who want to split dis Babylon."

Yah, well that's what I found in the archives when I tried to find out how to get out of here — I mean, well, it's just TOO tacky, not a Habitat in sight, and Julian says the wine bars don't bear thinking about — too, too sick-making. We've taken to drinking lager, but this stripey stuff the previous tenant left in the fridge has the oddest effect on one — Oh, Hampstead! Why did I leave you? Oh God — another can of beer — I can't keep this style going much longer!

If I didn't know that I could escape I might never have made the effort. Living here HAS that effect on folks. But I got this letter, see. It was addressed to me, but the person what wrote it forgot we know our mates by their Christian names and signed S. Jay. Good on yer mate, I hope the schools and fings are better out there than they are in Scarthorpe — don't see how they CAN'T be! But next time give me yer full name, so I'll know who you are!

Still, I'm getting out meself and will look you up. The next grubby tramp that knocks at yer door in Glebelands Road, looking for a

handout or a job COULD be yer old mate from Scarthorpe. Fanks, too, to the postie for gettin through. Only one question, postie, old pal, did yer HAVE to use yer submachine gun on my front door? That's part of the reason I'm getting out. I LIKED my old doss, the only thing this one has going for it is a solid front door.

I'm writing this in hospital while I get over my last mixup with the United supporters, then I'm getting out while the going is good. The problem is that the painkillers they are giving me sometimes effects what I write, so please excuse my wandering fingers . . . you CAN make sense of it if you try.

Oops, here comes the nurse again!

Getting out of jail is easy, once you've sussed it. If you xbjx mpoth fopvhi (move letters back one), the sergeant jf dbmmfe bxbz and you dbo tofbl pvu.

Boy, that stuff they give you is powerful!

There is not much chance to improve reading skills here, apart from gravestones, posters and signs. There is a useful book in the bookshop, though.

Fellow adventurers might remember to dress before leaving their rooms, the police in this town are GOOD, they have to be, but they can be said to be too keen on arrests — perhaps 'cause we don't believe in staying locked up if we can help it. They seem to spend more time on making arrests for indecent exposure, loitering and littering, when, if they was to arrest the football hooligans this might become quite a decent little town. Still, after the last Football Wars, when we were banned by the F.A. from playing against any club outside the town for the next hundred years — I may have

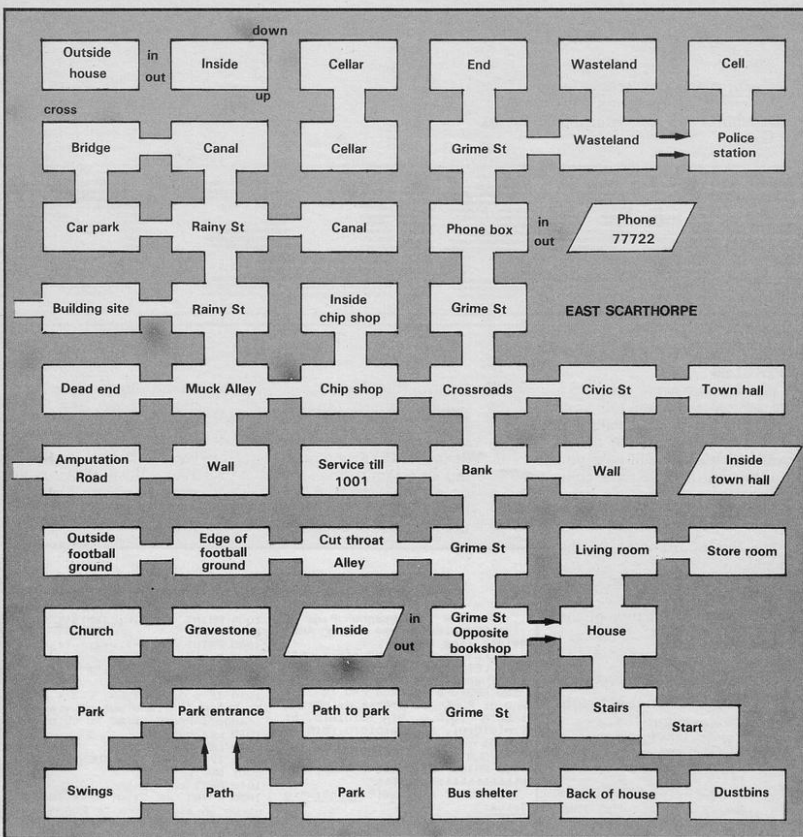
missed a few zeros off that figure, but it don't matter, do it? — the police seem to have lost interest in other thugs and the town has gone right to the dogs.

The worst thing about a charge of indecent exposure is that there is NO WAY to rip off a pair of strides if yore in the nick — the old bill are too attached to theirs and they've learnt to keep their spares at home — if cops HAVE homes.

The worst of the hooligans seem to live off Cut Throat Alley — that used to be such a pretty street once, when it was called Coburn Road. NEVER go down there on yer own, the filth use an armoured car if they get called in. The Ambulance guys are pretty good too; they go everywhere — they can afford to, they got their ambulance from the army experimental center and it spozed to be able to take anything up to an atom bomb. Nobody tried that yet, they closed down the college and moved out a lot of stuff when we got banned — some folks declare U.D.I., we got it forced on us; even Maggie gave up when they stopped her from using a nuke.

The only problem with the hospital is that since the oiks started roaming the corridors the staff don't see no point in letting us out. They say that if they do, it only means getting the ambulance out to pick us up again later. I spoze they right. You CAN get out though, there IS a way through that maze of corridors and if you got a doctor coat, they got so many problems with staff they let you go in case you really ARE the new Doctor.

If you REALLY stuck — god, here comes that \*\*\* nurse again, there is one surefire way out of the hospital, you just txfbs. Leave the mbshf lfx in uif jpvtf before



mfbwjoh boe after vokpdjloh uit epps.

The weird thing about Scarthorpe is that only the binmen seem to have credit cards — and those of you who listen to the Chip Shop are going to have a nasty surprise.

They tell me the telephone works, but at best all I seem to get is that \*\*\*\*\* speaking clock — at the third stroke the time will be seven seventy seven and twenty two seconds — precisely?

At the worst, the place is crawling with fuzzmobiles, all looking for yours truly.

Cathy insists I tell you that they've been real clever with

their graphics, and you can get a long way without being able to read a map. And Julian's friend just loved the Fauviste SCREEN\$.

There's one thing bout living in Scarthorpe, once I get out the world's gonna wonder what hit it.

To: Questline, Sinclair Programs,  
Priory Court, 30-32 Farringdon Lane,  
London EC1

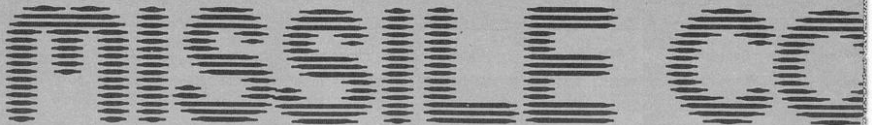
From: .....

HELP OFFERED .....

HELP WANTED .....



Missile command was written for the Spectrum or Spectrum Plus by Stephen Page of Ormiston, East Lothian.



## VARIABLES

A variable is a name given to a value which will then tell your Spectrum where that value is stored in memory. A list of the important variables will help you to understand how Missile command works.  
graphic a is the front of the alien ship.  
a,b are the coordinates of the alien ship.  
e is the horizontal position of the missile base.  
g is the vertical position of the missile.

80-100 Control the base position by scanning the keyboard to check if keys 5 or 8 have been pressed (using INKEY\$) and making sure that it does not go off the screen. A different BEEP for each direction gives a useful

sound effect when moving the base. The STOP key is also scanned to interrupt the game (line 95) and 0 for firing (line 100). If 0 has been pressed then control moves to the FIRE subroutine.

## HOW IT WORKS

Line No.

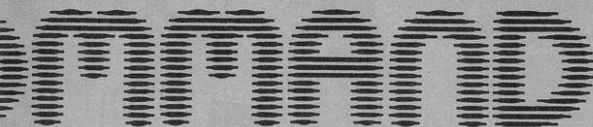
- 10 Selects a random height for the alien.
- 20 Reads data for graphic a and POKES it into memory.
- 40-50 Clears screen and prints ground under the missile base.

## MAIN CONTROL LOOP:-

- 60 Prints the missile base. This is made up of three of the Spectrum's own graphics, using graphic 6, graphic 3 (with Caps shift) and graphic 6 (with Caps shift). Note the space either side to erase the old position.
- 65 Increments loop counter f. To understand what this does, see notes for line 110.
- 70 Prints alien ship at a,b using graphic 6 and graphic a. Again, a space is used to the left to erase old positions.

```

0> REM @ 1984 Stephen Page
1 REM Please read letter and
delete line 1
10 LET a = INT ( RND *18): LET
b=1: LET e=16: LET f=0: LET g=18
: LET go=2000
20 RESTORE 20: FOR c=0 TO 7: R
EAD d: POKE USR "A"+c,d: NEXT c
: DATA 0,0,0,0,0, BIN 10101010, BI
N 01010101, BIN 10101010, BIN 01
010101
40 CLS
50 PRINT AT 21,0;"~~~~~"
60 PRINT AT 20,e;"(spig6:2*ig
3:ig6)"
65 LET f=f+1
70 PRINT AT a,b;"(spig6:2*ig3
2)"
80 IF INKEY$="5" AND e >= 0
THEN LET e=e-1: BEEP 1/100,0
90 IF INKEY$="8" AND e <= 31
THEN LET e=e+1: BEEP 1/100,50
95 IF INKEY$=" " STOP THEN
CLS: GO TO go
100 IF INKEY$="0" THEN PRINT
AT 21,0;"Missile fired": GO SU
B 1000
105 IF b >= 29 THEN CLS: PRIN
T FLASH 1:"Plane out of missile
range": FOR a=30 TO 1 STEP -1:
BEEP .3,a: NEXT a: PAUSE 0: GO T
O go
110 IF f=5 THEN LET b=b+1: LET
f=0: BEEP 1/100, INT ( RND *10)
120 GO TO 60
1000 FOR z=1 TO 20
1004 PRINT AT a,b;"(spig6:2*ig3
)"
1005 PRINT AT g-1,e+2;" ": AT g
+1,e+2;" "
1006 PRINT AT g,e+2;"!": BEEP .
02, INT ( RND *10)
1010 IF b >= 29 THEN CLS: PRIN
T FLASH 1:"Plane out of missile
range": PAUSE 0: GO TO go
1015 LET b=b+1
1020 LET g=g-1
1030 IF g=a AND e=b THEN PAUSE
500: GO TO 1500
1040 NEXT z
1050 PRINT AT 21,0;"Missile bur
nt up in atmosphere.": FOR a=1 T
O 20: BEEP .02,20-a: NEXT a: BEE
P .1,20
1055 FOR a=1 TO 2: PAUSE 0: NEXT
a
1060 GO SUB go
1500 PRINT AT 21,0;"You hit the
plane.": PAUSE 200
1510 PRINT AT 21,0;"Press any k
ey.": PAUSE 0:
GO TO 2000
2000 CLS: LET z#=z#(1): LET z#=(
2 TO )
2030 BEEP 1/100, RND : IF INKEY
$ <> "" THEN CLS: GO TO 10
2040 GO TO 2010
    
```



105 Checks if alien ship is still in range (i.e. still on the screen).

110 Moves alien 1 position to the right every five times the MAIN loop is executed. This means that the base can be moved five times as fast as the ship (though the programmer has used a cunning trick here — see notes for

120

FIRE routine). Keeps the program repeating the MAIN loop until an exit is made to the END routine at line 2000.

**FIRE ROUTINE**

1000 Sets up a loop counter for each missile position.

1004 Re-prints alien ship.

1005-1006 Erase old missile and print new.

1010-1015 Move ship to right and check for range. Line 1015 is the cunning bit. It makes the alien move to the right as fast as the missile is moving up the screen, to help him escape.

1020 Moves missile up one character position.

1030 Jumps to line 1500 if hit is scored.

1040 Loops back to start of FIRE routine if missile still below top of screen.

**END ROUTINE**

1050 Missile at top of screen.

1055-1060 Wait for a double key press to continue at line 2000

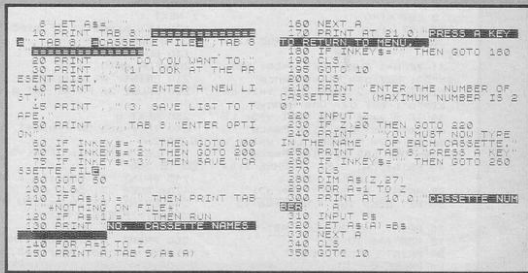
Print Hit message.

1500-1510 Set up title etc, in string variable Z\$ and then PRINT repeatedly, removing first character each time (to give appearance of text moving left to right) until a key is pressed to re-start game.

**BEGINNER****CASSETTE FILE**

**K**ee a record of your recorded programs with Computer File, written for the 16K ZX-81 by James Broadhurst and Neal Card of Bollington, Cheshire.

The program allows you to store records of up to twenty cassettes on tape, and has enabled James and Neal to sort out their program collection and keep an eye on where it all is.



## RENUMBER

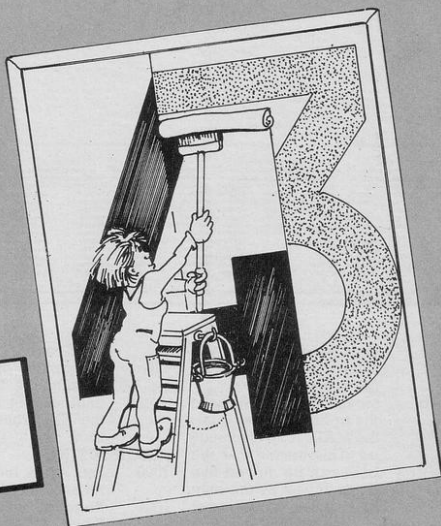
**R**enumering programs is often useful, both to make them look tidy, or to create a little more room in a subroutine. With these lines at the end of your listing, you can Renumber programs on the 48K Spectrum or Spectrum Plus as often as you wish. Simply enter GOTO 9997 when you wish to change line numbers, and the program will prompt you.

Note that only line numbers will be changed. Numbers within lines, following statements such as GOTO and GOSUB will not be changed.

Written by G Bennett of Hillingdon, Middlesex.

```

9997 LET s= PEEK 23635+256*( PEE
K 23636): INPUT "in steps of?":s
t: INPUT "begin at?":b
9998 IF ( PEEK s+1)+(256* PEEK s
)>9996 THEN STOP
9999 POKE s, INT (b/256): POKE s
+1,b-256: INT (b/256): LET s=s+4
+ PEEK (s+2)+ PEEK (s+3)*256: LE
T b=b+st: GO TO 9998
    
```



# BEGINNER

## COIN DROP

**D**rop your coins into the box which appears on the bottom of the screen by pressing any key. Your coin is held in a claw suspended from a rail running across the top. Each time you hit your target you are awarded a sum of money. To continue playing press any key. All underlined characters are to be entered in graphics mode.

Coin Drop was written for the Spectrum by Jamie Monk from Crawley.



```

5 LET mi=0
10 LET mi=0
30 CLS : LET m= INT ( RND *10)
+1
31 IF m=1 THEN LET v=50: LET
a$="D": LET b$="Fifty Pence"
32 IF m >= 2 THEN LET v=1: LE
T a$="o": LET b$="One Penny"
34 IF m >= 6 THEN LET v=5: LE
T a$="*": LET b$="Five Pence"
36 IF m >= 9 THEN LET v=10: L
ET a$="O": LET b$="Ten Pence"
40 PRINT AT 0,5: INVERSE:lb$
45 PRINT AT 9,0: ("32+ig3")
50 LET pob= INT ( RND *26)+5
70 PRINT AT 20,pob:"AB"
75 FOR f=0 TO 31
80 PRINT AT 10,f:"C"
90 PAUSE 5
100 IF INKEY# <> "" THEN GO
TO 200
110 PAUSE 1: PRINT AT 10,f:" "
    
```

```

: NEXT f
120 LET mi=mi+1: IF mi=5 THEN
GO TO 300
130 GO TO 30
200 FOR g=10 TO 19
210 PRINT AT g,f:a$
220 PAUSE 2: PRINT AT g,f:" "
230 NEXT g
240 IF f=pob OR f=pob+1 THEN G
O TO 260
241 LET mi=mi+1: IF mi=5 THEN
GO TO 300
245 PRINT AT 20,f:"X": BEEP .3
,-30: BEEP .3,-50
246 PRINT AT 10,0:"YOU MISSED"
: PRINT "PRESS A KEY"
247 PAUSE 0: GO TO 30
260 PRINT AT 20,pob: INK 2:"AB"
: BEEP .03,55: BEEP .03,50: BEE
P .04,50: BEEP .04,50: BEEP .03,
55
265 LET mi=mi+1
270 PRINT AT 10,0:"Well Done!"
    
```

```

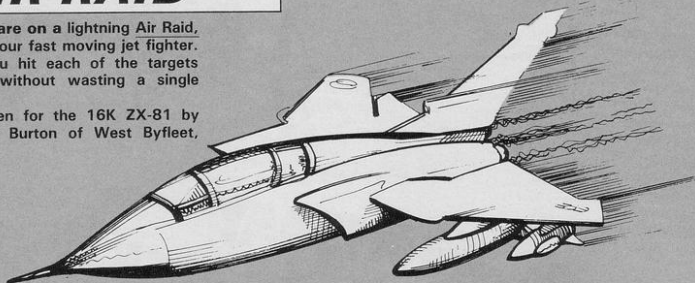
You Dropped: ": AT 11,0: INK 2;b
#: INK 0: "In the Box"
280 PAUSE 0: GO TO 30
300 BEEP .5,-40: BEEP .5,-50
310 PRINT "You Have Collected "
:mi$b: " Pence"
320 INPUT "Play Again ? (y/n) "
:ff
330 IF f$(1)="y" THEN RUN
340 IF f$(1)="n" THEN STOP
350 GO TO 320
9990 FOR f= USR "a" TO USR "d"+
7: READ a: POKE f,a: NEXT f
9991 DATA 0,15,48,48,47,32,32,63
9992 DATA 0,248,4,6,250,2,2,254
9993 DATA 124,124,16,56,84,84,84
,0
9994 DATA 60,66,153,165,165,153,
66,60
9995 RUN
9999 SAVE "Coin Drop" LINE 9990
    
```



## AIR RAID

**You** are on a lightning Air Raid, in your fast moving jet fighter. Can you hit each of the targets below without wasting a single bomb?

Written for the 16K ZX-81 by Charles Burton of West Byfleet, Surrey.



```

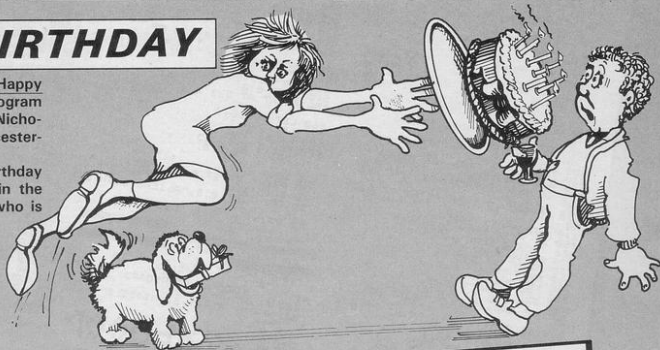
1 LET Z=0
2 DIM U(5)
3 LET S=0
4 PRINT AT 0,10;"AIR-RAID"
5 LET A$=""
6 FOR D=1 TO 10
7   FOR N=1 TO 5
8     LET U(N)=INT (RAND*27)+4
9     PRINT AT 19,U(N);CHR$ 173
10  NEXT N
11  FOR A=27 TO 1 STEP -1
12    PRINT AT 5,A;"-0-"
13    IF INKEY$="0" THEN GOTO 130
14  NEXT A
15  PRINT AT 5,A;" "
16  PRINT AT 19,0;" "
170 NEXT D
117 PRINT AT 5,0;"YOUR HITS/SHOTS: ";S;" / ";Z
120 STOP
133 LET Z=Z+1
132 FOR E=7 TO 19
140 PRINT AT F,A+1;"*";AT F-1,A+1;" "
145 NEXT F
150 FOR Y=1 TO 5
153 IF U(Y)=A+1 THEN GOTO 160
160 NEXT Y
165 PRINT AT F-1,A+1;" "
170 NEXT A
180 LET S=S+1
185 PRINT AT F-1,A+1;CHR$ 151
190 NEXT A
195 GOTO 90
  
```

## BEGINNER

## HAPPY BIRTHDAY

**W**ish your friends a Happy Birthday with this program written for the Spectrum by Nicholas Moyle of Dursley, Gloucestershire.

The program will play a birthday tune and display a pattern in the favourite colour of anyone who is having a birthday.



```

1 CLS
10 INPUT "Who has got a birthday today? (Please enter your name) ";A$
20 CLS : INPUT "What is your favourite colour? (Enter a number 0 to 6) ";B
25 CLS
30 INK B
35 BORDER B
40 FOR #=0 TO 3: PRINT AT F,0
  
```

```

;"HAPPY BIRTHDAY ";A$
50 NEXT F
60 BEEP .25,0: BEEP .25,0: BEEP .5,2: BEEP .5,0: BEEP .5,5: BEEP .5,7: EP 1,4
70 BEEP .25,0: BEEP .25,0: BEEP .5,2: BEEP .5,0: BEEP .5,5: BEEP .5,7: EP 1,5
80 BEEP .25,0: BEEP .25,0: BEEP .5,12: BEEP .5,9: BEEP .5,5: BEEP .5,4: BEEP 1,2
  
```

```

90 BEEP .25,10: BEEP .25,10: BEEP .5,9: BEEP .5,5: BEEP .5,7: BEEP 1,5
100 FOR S=-40 TO 40 STEP 1: BEEP .005,S: PLOT S+120,140: NEXT S
  
```

```

110 PLOT 70,110
120 DRAW 4,4,4040
1000 STOP
9999 SAVE "Birthday" LINE 1: RUN
  
```



## Dear Diary

Dad's been nagging me to write a program. He wants me to prove that I understand the Spectrum. He claims he only bought the machine because I told him it would turn me into a computer programmer.

Showing great patience, I explained that the Spectrum HAD been educational; it had taught me that thinking you needed to be a programmer in order to use a computer was like thinking you needed to be a mechanic in order to drive. Using it to zap aliens, as he correctly described my habits, was the true, progressive way to employ the device.

I also told him I couldn't have got this job writing for Sinclair Programs if I didn't know SOMETHING. He said that all I knew was my sister, "a computer virtuoso"

I decided that if I write a music routine then even someone of Dad's generation would be able to understand the skill involved — and it would be handy for the magazine.

After some lengthy sessions where I explained the principles involved to my little sister Eustacia, I'd sorted out the main part of the program. As I told her, the first line dimensioned an array which would be filled, in line 2, by the values of the notes contained in line 4. Lines 30 and 32, meanwhile, sat in the main loop which created your aliens and your missiles and your smart bombs and your nuclear laser gun.

```
1 DIM P(100): LET P=0
2 FOR X=1 TO 96: READ P(X): NEXT X
4 DATA . . . (the values of the notes) . . .
30 LET P=P+1: IF P=96 THEN LET P=1
32 BEEP .05,P(P)
```

However, I explained, in longer programs this routine might slow the response to key presses for the missiles and bombs and stuff. So we should stop the tune if keys were being pressed by deleting line 32, replacing line 30, and adding new lines.

```
30 IF NOT LEN INKEY$ OR IN 32766=191 THEN
GO TO 100
100 IF LEN INKEY$ OR NOT IN 32766=191
THEN GO TO 35
110 LET P=P+1: IF P=96 THEN LET P=1
115 BEEP .05,P(P)
120 GO TO 100
```

This is when Eustacia shocked me very much by refusing to calculate the DATA values for line 4 — even when I explained how very educational she would find it.

Several days later I had written line 4 as follows,

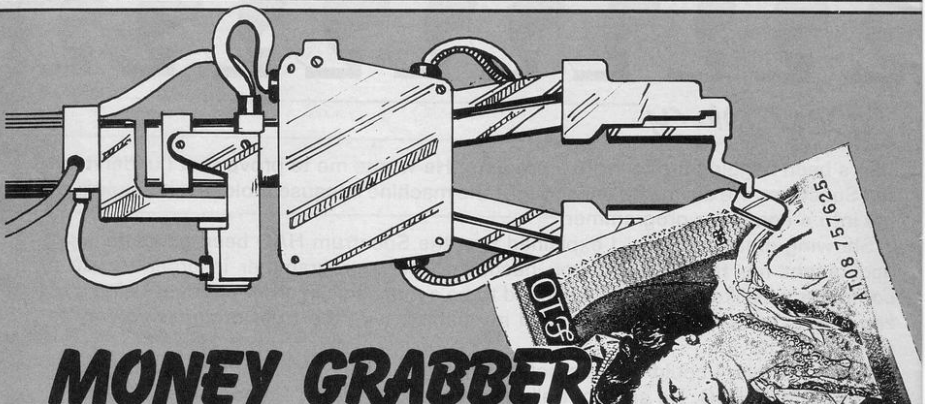
```
4 DATA 69,2,14,13,14,9,12,10,7,69,-2,2,7,9,69,2,6,9,10,69,2,1,4,13,14,9,
12,10,7,69,-2,2,7,9,69,2,10,9,7,69,69,9,10,12,14,5,15,14,12,3,14,12,10,2,
12,10,9,2,14,13,14,9,12,10,7,69,-2,2,7,9,69,2,6,9,10,69,2,14,13,14,9,12,
10,7,69,-2,2,7,9,68,2,10,9,7,69,69,69
```

However, I made sure Dad saw me sweating over this music. I'm going to convince him that buying me a new stereo system would help me learn classical guitar.

Sid







# MONEY GRABBER

You and the computer take it in turns to collect money from a grid. On this grid it is only possible to move right and down, so you can never retrace your steps. The computer is playing blind so it is allowed three times as many chances as you, and is also allowed an extra pound for luck whenever it finds a pound. Your reactions must be fast and precise in order to beat the computer.

Money Grabba was written for the 16K ZX-81 by M Phillips of Redland, Bristol.

```

00REM COPYRIGHT MAP
00REM *** "MONEY GRABBA" ***
00CLS
00PRINT " *** "MONEY GRAB
00PRINT " *** "
55PRINT " THE COMPUTER: "
56PRINT " YOU: "
56PRINT "MOVING WITH KEYS: 8 R
57PRINT " DOWN, YOU TAKE TURNS
58PRINT " WITH THE COMPUTER TO GRAB MON
59PRINT " EY, WHEN THE COMPUTER GRABS A POU
60PRINT " ND IT GAINS ANOTHER (FOR LUCK) 1
61PRINT " NEEDS TWO POUNDS MORE THAN YOU
62PRINT " TO WIN.
63PRINT " SOME OF THE MONEY UI
64PRINT " APPEAR TOO FAR AWAY.
65PRINT " OR ELSE IT MAY DISAPPEAR VERY O
66PRINT " UICKLY, THIS GIVES THE COMPUTER A
67PRINT " FIGHTING CHANCE."
68PRINT " THE COMPUTER GOES AT
69PRINT " AND HAS THREE ATTEMPTS AT GR
70PRINT " ABING SOME MONEY, YOU ONLY HAVE
71PRINT " ONE ATTEMPT SO MAKE SURE YOUR AI
72PRINT " IS TRUE."
73PRINT " AT 21,10, "GOOD LUCK"
74IF INKEY$="" THEN GOTO 99
100LET B0=4
110LET P0=800
120GOSUB 5000
400LET O=0
500LET R=0
600RND=
700LET P=25
1000LET A=INT (RND*8)+1
1005LET P=P+1
1010LET B=INT (RND*8)+9
1020PRINT AT A,B,CHR$ (12)
1030LET X=1
1040LET Y=8
1045IF O=1 THEN GOTO 3000
1050FOR N=1 TO 12
1060NEXT N
1070IF C THEN LET X=X+1
1080IF NOT C THEN LET Y=Y-1
1090PRINT AT X,Y,CHR$ (128)
1095PRINT AT X,Y,CHR$ (0)
1100IF X=A AND Y=B THEN GOTO 12
05
1200NEXT N
1202GOTO 1210
1205LET R=1

```

```

1210PRINT AT A,B,CHR$ (0)
1310IF R=1 THEN GOTO 2500
1320IF P=31 THEN GOTO 2000
1320GOTO 1000
2500LET O=1
2505IF B THEN GOTO 2520
2505PRINT AT 17,P0,CHR$ (12);AT
2517,P0+2,CHR$ (12)
2520LET P=P+4
2520IF P0=25 THEN GOTO 6000
2530IF INKEY$="" THEN GOTO 2530
5000GOTO 5003
5003LET K=INT (RND*16)+4
5004FOR F=1 TO K
5005PRINT AT X,Y,CHR$ (8)
5007PRINT AT X,Y,CHR$ (0)
5009LET X=X+(INKEY$="8")
5010LET Y=Y+(INKEY$="9")
5020IF X=A AND Y=B THEN GOTO 40
3030NEXT F
3032PRINT AT A,B,CHR$ (0)
3037IF INKEY$="" THEN GOTO 3037
3040GOTO 400
4000PRINT AT A,B,CHR$ (0);AT 19
4005,CHR$ (12)
4005LET B0=B+2
4020IF B0=24 THEN GOTO 6000
4020IF INKEY$="" THEN GOTO 4020
4040GOTO 400
5000NEXT N
5003FAST
5005FOR N=0 TO 13
5010PRINT AT N,7,CHR$ (3);AT N,
5022,CHR$ (3)
5022FOR N=1 TO 29
5023PRINT AT 15,N,CHR$ (133);AT
5023,N,CHR$ (133)
5025NEXT N
5025FOR N=8 TO 21
5030PRINT AT 8,N,CHR$ (133);AT
5030,N,CHR$ (133)
5035NEXT N
5042FOR N=15 TO 21
5042PRINT AT N,0,CHR$ (2);CHR$
5042,AT N,30,CHR$ (3)
5044NEXT N
5046PRINT AT 15,1,CHR$ (133);AT
5046,1,CHR$ (133)
5048PRINT AT 17,2,CHR$ (128);AT
5048,2,CHR$ (0)
5050PRINT AT 16,18,0
5052PRINT AT 22,5,"*** "MONEY
5052GRABBA" ***
5054PRINT TAB 5;
5150SLOW
5152RETURN
6000IF P0=25 THEN GOTO 7000
6002FOR N=0 TO 20
6004PRINT AT 19,N,CHR$ (8)
6005NEXT N
6010FOR N=1 TO 25
6020PRINT AT 19,B0,CHR$ (0)
6040PRINT AT 19,B0,CHR$ (12)
6050NEXT N
6070IF INKEY$="" THEN GOTO 6070
6080RUN
7000FOR N=4 TO 25
7002PRINT AT 17,N,CHR$ (128)
7005NEXT N
7005FOR N=1 TO 25
7020PRINT AT 17,P0,CHR$ (0)
7040PRINT AT 17,P0,CHR$ (12)
7050NEXT N
7077IF INKEY$="" THEN GOTO 7070
7777RUN
9997CLEAR
9998TRUE "MONEY GRABBA"
9999RUN

```

# S P R O G S

THE SPROGS MEET A KNIGHT IN ARMOUR



THEY ARRIVE IN WITCHWOOD



MERLIN COMES FORWARD



THEY LEAVE MERLIN AND SET OFF THROUGH THE FOREST

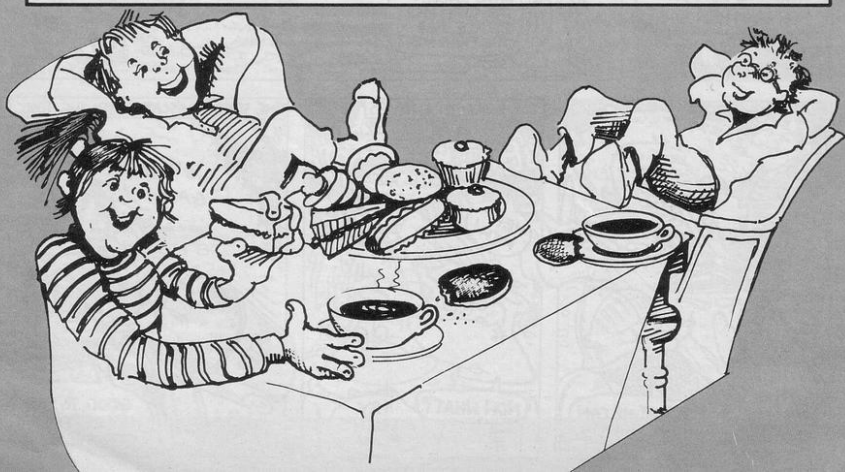


THE DRAGON AWAKES!



THE SPROGS ESCAPE WITH THE TORC!!







**Y**ou are the spider chief in exile. You wish to return to your spider domain. All you have to do is cross the two persian carpets in the living room. However, the owners of the house hate spiders and have placed a selection of lethal traps on the carpet.

Use keys 5 and 8 to move as many of your people as is possible across the first carpet. Use keys 6 and 7 to move across the second carpet. The first spider to reach the spider domain will open the gates and lead you all to safety.

Spider Domain is based on a program written for the 16K ZX-81 by Paul Arthwell and Simon Hodgkins of Wolverhampton.

## SPIDER DOMAIN



```

85 RAND
90 LET I=0
95 LET Y=0
100 PRINT AT 19,4;"(PRESS (5) T
O START)"
105 IF INKEY$="S" THEN GOTO 107
106 GOTO 105
107 CLS
108 LET X=1
109 LET S=0
110 REM SCREEN 1
111 LET G=0
120 PRINT AT X,Y;"X"
130 LET X=X+1
140 IF X=20 THEN GOTO 150
145 GOTO 120
150 LET A=0
155 LET X=INT (RAND*7)+7
156 LET Y=INT (RAND*29)+1
155 LET A=A+1
165 LET P=1
170 PRINT AT X,Y;"P"
175 IF A=65 THEN GOTO 185
180 GOTO 155
185 LET X=19
190 LET Y=1
195 LET G=1
200 LET Y=INT (RAND*15)+5
205 LET Y=INT (RAND*25)+2
210 PRINT AT P,Y;"P"
215 PRINT AT X,Y;"P"
220 LET P=P+10
230 LET V=PEEK (PEEK 16398+256+
PEEK 16399)
240 IF V=199 THEN GOTO 305
245 IF V=131 THEN GOTO 295
246 IF V=53 THEN GOTO 325
250 IF U=23 THEN GOTO 185
255 PRINT "O";AT P,U,
260 FOR T=1 TO 5
265 NEXT T
270 PRINT "P";AT P,U,
275 IF INKEY$="8" THEN LET U=U+
1
280 IF INKEY$="5" THEN LET U=U-
1
285 IF P=10 THEN GOTO 325
290 GOTO 210

```

```

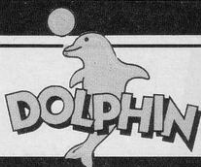
295 LET S=S+1
296 IF S=10 THEN GOTO 400
300 PRINT AT 0,0,S;"SPIDER CH
305 PRINT AT 18,0;"X"
310 GOTO 105
325 LET I=I+1
330 IF I=10 THEN GOTO 350
335 PRINT AT 0,17;"SPIDER CH
340 PRINT AT 18,0;"X"
345 GOTO 105
350 CLS
355 LET G=0
360 PRINT AT 8,0;"
ON WAS
SUCCESSFUL
HEROES!
YOUR MISSI
UN
(YOU DIED)
365 LET G=G+1
366 IF G=2 THEN GOTO 45
390 GOTO 380
400 CLS
405 REM SECOND SCREEN
410 PRINT AT 8,0;"
ART OF YOUR
BEEN SUCCESSFUL
415 FOR U=0 TO 200
420 NEXT U
425 CLS
430 PRINT AT 0,0;"NOW CROSS FRO
M LEFT TO RIGHT. USE KEYS 6 AN
D 7 TO STEEP
435 PRINT AT 19,5;"(PRESS (5) T
O CONTINUE)"
436 IF INKEY$="5" THEN GOTO 440
437 GOTO 436

```

```

440 CLS
445 FAST
450 PRINT AT 1,0;"XXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX"
451 PRINT AT 19,0;"XXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXX"
460 LET U=0
461 LET X=0
462 LET V=2
475 PRINT AT Y,X;"X"
480 LET Y=Y+1
485 IF Y=13 THEN GOTO 500
486 LET U=0
490 GOTO 475
500 LET Z=INT (RAND*17)+1
505 LET R=INT (RAND*20)+5
510 LET U=U+1
515 PRINT AT Z,R;"X"
525 IF U=78 THEN GOTO 540
526 PRINT AT 10,27;"SD"
530 SLOU
535 GOTO 500
540 LET D=0
545 LET X=10
550 LET V=1
555 PRINT AT X,Y;"
PEEK 16398)
560 IF V=51 THEN GOTO 600
565 IF U=56 THEN GOTO 620
570 PRINT "O";AT X,Y,
575 PRINT AT X,Y;"
580 IF INKEY$="6" THEN LET X=X+
1
585 IF INKEY$="7" THEN LET X=X-
1
590 LET V=V+1
595 GOTO 560
600 LET D=D+1
605 PRINT AT 0,3;"D; SPIDER
610 IF D=10 THEN GOTO 355
615 GOTO 545
620 CLS
621 FOR N=1 TO 20
625 PRINT "CONGRATULATIONS: CHI
SPIDER
626 NEXT N

```

**SINCLAIR PROGRAMS****COMPUTER**

**Sinclair Programs has negotiated an exclusive offer for all readers with computer holiday specialists Dolphin Holidays.**

**£10 off the Basic Computer Holiday**

**£15 off the Advanced Computer Holiday**

**£20 off the special SINCLAIR PROGRAM**

On all Dolphin's week-long computer holidays each participant has exclusive use of a Spectrum computer (ZX-81 owners can opt to use a ZX-81) and help from a computer expert. Also available is a wide range of robotic and artificial intelligence equipment including buggies, droids, speech synthesis, speech recognition systems and electronic lego. Software can be borrowed from each camp's extensive software library, including both educational and games software.

Also available on the camps are an enormous range of sports and activities. Tennis, swimming, sailing, BMX bikes, orienteering and gymnastics are just some of the options available during the time when you are not computing.

**BASIC HOLIDAY: DOWN  
FROM £144 TO £134 (+ VAT)**

Every computer owner from the complete beginner to the expert in Basic will enjoy this holiday. The course allows you to learn programming and software applications at your own rate as you solve problems in the fantasy adventure world of our hero, Chan. Each adventure introduces a new concept and technique in programming. Beginners start with LOGO and BASIC, while the more experienced explore FORTH, MACHINE CODE, PASCAL and ADVANCED BASIC.

Chan has adventures in the real world as well which need special robots to help him. Learn how to control robots with computers, and then build the special machines he needs.

Work at your own pace throughout, either individually or as a member of a group. With such a wide range of help and experience available, we expect that you will be racing ahead by the end of the week.

**ADVANCED COURSE: DOWN  
FROM £154 TO £139 (+ VAT)**

This holiday is aimed at readers with an extensive knowledge of programming, including a knowledge of simple machine code. On the advanced course you can opt to spend up to 2/3 of your time on the camp computing rather than on other fun activities. The problems on this course are pitched at a much more advanced level, and cover advanced aspects of robotics, artificial intelligence and control technology.

The course also takes you inside computers to show how they work, the particular facets of each machine's processor, operating system and memory. Other advanced computer work includes projects such as work on digital electronics, robot control and controlled engineering, vision systems, image processing and speech synthesis.

There will also be opportunities to bring along and solve your own software problems, and to get active help from staff in developing any project on which you have been working.



# R HOLIDAY



tions available on each camp, the Sinclair Program offers many extra features:

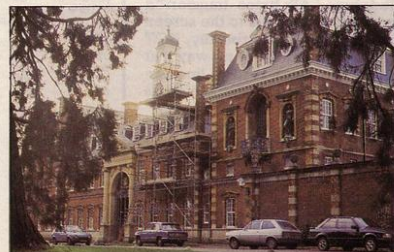
- OVER £30 WORTH OF TOP QUALITY SOFTWARE: FREE
- VISIT FROM THE EDITORIAL STAFF OF SINCLAIR PROGRAMS TO EXPLAIN HOW A COMPUTER MAGAZINE IS PRODUCED
- VISIT FROM TOP ADVENTURE GAMES PROGRAMMERS
- CHANCE TO HAVE YOUR LISTINGS PUBLISHED IN SINCLAIR PROGRAMS
- SEE YOURSELF IN THE OCTOBER ISSUE OF SINCLAIR PROGRAMS



The Sinclair Program will run at Wellington College, Crowthorne, Berkshire for a week, beginning on August 3rd, 1985. It is open to all readers aged 12-17.

To apply for the Sinclair Program, the Advanced Course or the Basic course, simply complete the coupon on this page, make sure your parent or guardian has signed it, and post it, remembering to retain the money-off voucher on the other side.

See you at Wellington College!



## BASIC COURSE: £134 (+VAT)

CENTRE	AGE	START DATES
Welwyn	8-12 years	20, 27 July 3, 10, 17 August
Brighton	8-12 years	20, 27 July 3, 10, 17, 24 August
Crowthorne	12-16 years	20, 27 July 3, 10, 17, 24 August
Harrogate	8-12 years 12-16 years	20, 27 July 3, 10, 17, 24 August

## ADVANCED COURSE: £139 (+VAT)

Harrogate	12-17 years	20, 27 July 3, 10, 17, 24 August
Crowthorne	12-17 years	20, 27 July 3, 10, 17, 24 August

## EXCLUSIVE SINCLAIR PROGRAM: £144 (+VAT)

Wellington College, Crowthorne	12-17 years	3 August
-----------------------------------	-------------	----------

## SPECIAL SINCLAIR PROGRAM: DOWN FROM £164 TO £144 (+VAT)

The Sinclair Program is *Sinclair Programs'* own special course, open only to readers of *Sinclair Programs*. The course will be set at the same level, and cover the same subjects as the Advanced Course, so you will need to have some knowledge of machine code in order to be able to attend.

In addition to those subjects covered by the Advanced Course, and the general sporting op-



# Machine code vertical scroll

**Tony Rickwood continues his series on machine code as he looks again at the procedure for scrolling pictures vertically.**

IN PART one last month, I showed you how to set up a file of addresses to identify which locations in the Spectrum display file referred to Column 0 addresses for each pixel line of the screen display (the left-most character positions). In Part two, you will learn how to use this file to execute the vertical scroll.

First, it is important to understand how the preliminary setting up of a file serves the execution routine we will be developing here. Why is a file of addresses needed when all the information is contained in the Spectrum's own display file? In any case, you might also ask, why can't the problem be dealt with by simply rotating bit patterns vertically instead of horizontally? (Remember how the "RL" and "RR" (Rotate Left/Rotate Right) instructions gave us such a compact solution to the problem of horizontal scrolling?).

Let's take the second question first. Rotation instructions (there are others beside RL and RR, as we shall see) are designed to work only on the bits of a specified byte. All bytes transferred from the display file to the screen are transferred horizontally, NOT vertically, so there is no way that eight pixels on a vertical line can be identified and manipulated as a single byte of data.

As we must work with whole bytes of data, a possible solution might be to work through consecutive bytes of the display file (though not consecutive on the screen) from the second pixel row down, find out which byte of the display file corresponds to

the location immediately above the screen, and copy the byte from one location to the other. This would be slightly long-winded though, mainly because of the way the display file is configured. Fortunately, the Z80 instruction set contains a powerful block handling instruction which allows the m/c programmer to move a block of data from one area of

## Program 2

```
10 REM Program 2 - Pixel Scroll
11 LF
20 CLEAR 62999; LET s=0; FOR i
=64000 TO 64038: READ n: POKE i,
n: LET s=s+n: NEXT i
30 READ sum: IF s <> sum THEN
PRINT "error in data entry - re
type line 40": STOP
40 DATA 1,192,0,197,8,62,0,1,2
4,246,8,10,35,3,10,87,3,197,10,1
11,3,10,103,1,32,0,237,176,193,8
,60,254,191,56,231,193,16,221,20
1,3451
50 PRINT "data entry o.k." : "no
w running m/c": PAUSE 100
60 LIST : RANDOMIZE USR 64000
: STOP
70 SAVE "upcode" CODE 64000,39
```

memory to another. For this application, it enables us to transfer a whole line of data as represented on the screen (32 bytes) to the line above (via the display file) in one go. To use this instruction, we need to know the address of the first byte of the block to be copied (base address) and first byte to be copied to (destination). To move whole lines then, base and destination addresses will be the column 0 addresses in our

pre-computed file.

The program to execute an UPWARD SCROLL is listed as Program 2 (Program 1 being that listed in Part 1). As usual, both Basic and Assembler are given. First, try running the Basic, although you must have previously run Program 1 to create the file. The m/c for both programs loads into the same area of memory (starting at location 64000). The important point though is that Program 1 m/c has been executed to create the file at 63000 before it gets overwritten by Program 2 m/c (line 20).

For the Assembler, understanding is made easier by seeing how the whole screen is moved up by a single pixel (lines 50-270). The outer loop (lines 30-40 and 280-290) to repeat the process 192 times for all pixel lines should be self explanatory, provided you have properly understood what I have previously said about DJNZ loops.

The inner loop, which moves the whole screen by a single pixel only, really revolves around the block handling instruction, LDIR, in line 220. This mnemonic is read as Load, Increment, and Repeat" and is a self-contained automatic loop to do the following:

- 1) Load (DE) with (HL)
- 2) Increment DE and HL
- 3) Decrement BC
- 4) Repeat 1-3 until BC is zero.

As you can see, LDIR is a very powerful instruction. Let us now see how it can be harnessed to



## Assembler

```
10 ;ASSEMBLER FOR PROGRAM 2- EXECUTES PIXEL SCROLL UP
20 ;
01C000 30 LD BC,192 ;EXECUTES SINGLE PIXEL
05 C5 40 SCREEN PUSH BC ;SCROLL 192 TIMES
08 50 EX AF,AF' ;INITIALIZE ROW COUNTER
3E00 60 LD A,0 ;START OF COL 0 ADDRESSES
0118F6 70 LD BC,EF618 ;START OF LOOP FOR 1 PIXEL SCROLL
08 80 ROW EX AF,AF'
0A 90 LD A,(BC)
5F 100 LD E,A
03 110 INC BC
0A 120 LD A,(BC) ;DE HOLDS ROW TO BE COPIED TO
57 130 LD D,A
03 140 INC BC
C5 150 PUSH BC
0A 160 LD A,(BC)
6F 170 LD L,A
03 180 INC BC
0A 190 LD A,(BC)
57 200 LD H,A ;HL HOLDS ROW TO BE COPIED FROM
012000 210 LD BC,32 ;BC HOLDS NO. OF BYTES TO BE COPIED
EDB0 220 LDIR ;COPIES CURRENT ROW TO PRECEDING ROW
C1 230 POP BC
08 240 EX AF,AF' ;INCREMENT ROW COUNTER
3C 250 INC A ;LOOP BACK UNTIL
FEF6 260 CP 191 ;192 ROWS SCROLLED ONCE
3BE7 270 JR C,ROW
C1 280 POP BC ;LOOP BACK UNTIL WHOLE SCREEN DONE
10DD 290 DJNZ SCREEN
C9 300 RET
```

our problem. Start by considering the first two pixel lines. The addresses of the first character (column 0) of each is 4000H and 4100H respectively (which are the first two values in our address file). Each line being represented by 32 consecutive bytes of the display file from these addresses, LDIR can be used to copy the second line to the first by setting DE to 4000H and HL to 4100H with BC=32 for the byte count.

One snag with all block handling instructions (there are others as we shall see). They use up all three user register pairs HL, DE and BC. HL and DE are used repeatedly to point to the Spectrum's display file. In addition, we need a register pair to point to our own file, which can be incremented. BC is the only sensible choice, but it is tied up as a pixel counter for the outer DJNZ loop. By PUSHing and POPping onto and off of the stack (lines 40 and 280), this leaves BC free for the inner loop. We must now arrange for BC to double up as our file pointer as well as the byte count for

```
10 REM Program 3 - Pixel Scroll
11 DOWN
20 CLEAR 62999: LET s=0: FOR i
=64000 TO 64038: READ n: POKE i,
n: LET s=s+n: NEXT i
30 READ sum: IF s <> sum THEN
PRINT "error in data entry - re
type line 40": STOP
40 DATA 1,192,0,197,8,62,0,1,1
51,247,8,10,87,11,10,95,11,197,1
0,103,11,10,111,1,32,0,237,176,1
93,8,60,254,191,56,231,193,16,22
1,201,3603
50 PRINT "data entry o.k." : "no
w running m/c": PAUSE 100
60 LIST : RANDOMIZE USR 64000
1 STOP
70 SAVE "dncode" CODE 64000,39
```

values in one or other of two sets. Line 50 (EX AF,AF) brings in the alternative AF pair (called AF') and line 60 initializes the alternative A register to zero for the inner loop counter.

Line 70 sets up BC to point to the start of our file (63000=F618H) and line 80 is the start of the inner ROW loop. The first step within this loop is to restore the normal AF pair with EX AF,AF' in order not to corrupt our loop counter by copying via the A register. As we have seen, we are unable to fetch two bytes in one go with our file pointer, BC. For example,



LDIR.

Yet another slight complication. We need an inner loop counter to count each pixel row as it is moved up one pixel. Having released BC from the outer loop for two other jobs, we can hardly tie it up again on an inner DJNZ loop (remember the right and left scroll routines where we used two nested DJNZ loops?). The alternative is to use a jump instruction but we still need a counter. The A register is used in such cases and is free for the job, though again, it must double up because we will be using it as an intermediate register for getting our file addresses into HL and DE (see later).

Though the AF register pair can also be PUSHed and POPped (like BC), I have introduced an alternative device into the program called **Register Exchange**. The Z80 has an alternative register set which gives the m/c programmer a means of holding the

there is no such instruction as LD DE,BC) to get the two bytes pointed to by BC into DE. It must be done one byte at a time via the A register. Thus, line 90 gets the first byte from the file (00H) and puts it in A. Line 100 then transfers this to the E register. Line 110 increments the file pointer so that lines 120 and 130 can put the next byte (40H) into D (again via the A

register). Now we have the display file address of the first line to be copied to in DE (note that E has to be loaded first because of the way we set up our file (low order byte first). Following execution up to and including line 200, the process is repeated for HL, so that DE and HL (for destination and base) contain 4000H and 4100H respectively on the first pass. Note that BC is PUSHed onto the stack in line 150. We need to free BC for the byte count in LDIR (line 210). PUSHing at this point holds our file pointer ready for the next loop.

All this preparation is finally consummated by the LDIR in line 210. BC can now be switched back to file pointer mode in line 230. We can also switch back to row counter mode for A (lines 240-250). The test for completing 192 rows (and jump back if not) is handled by lines 260-270. "CP 191" is read as 'Compare the contents of the A register with 191'. This is really subtracting 191 from A, though only the flags in the F register are affected by the result. "JR C,ROW" is read as "Jump back Relative to instruction labelled ROW if the (C)arry flag is set". The Carry flag will be set if A contains a number which is less than or equal to 191.

Program 3 lists the SCROLL DOWN routine. The principles are exactly the same as in scrolling up, though now we start with BC pointing to the last location of our address file and work backwards. Note that D is now loaded before E and H before L when loading addresses in reverse.

#### Assembler

```
10 ;ASSEMBLER FOR PROGRAM 3- EXECUTES PIXEL SCROLL DOWN
20 ;
30 ; LD BC,192 ;EXECUTES SINGLE PIXEL
40 ; SCREEN PUSH BC ;SCROLL 192 TIMES
50 ; EX AF,AF'
60 ; LD A,0 ;INITIALIZE ROW COUNTER
70 ; LD BC,#F797 ;END OF COL. O ADDRESSES
80 ; ROW EX AF,AF' ;START OF LOOP FOR 1 PIXEL SCROLL
90 ; LD A,(BC)
100 ; LD E,A ;DE HOLDS ROW TO BE COPIED TO
110 ; DEC BC
120 ; LD A,(BC)
130 ; LD E,A
140 ; DEC BC
150 ; PUSH BC
160 ; LD A,(BC)
170 ; LD H,A
180 ; DEC BC
190 ; LD A,(BC)
200 ; LD L,A ;HL HOLDS ROW TO BE COPIED FROM
210 ; LD BC,32 ;BC HOLDS NO. OF BYTES TO BE COPIED
220 ; LDIR ;COPIES CURRENT ROW TO PRECEDING ROW
230 ; POP BC
240 ; EX AF,AF'
250 ; INC A ;DECREMENT ROW COUNTER
260 ; CP 191 ;LOOP BACK UNTIL
270 ; JR C,ROW ;192 ROWS SCROLLED ONCE
280 ; POP BC
290 ; DJNZ SCREEN ;LOOP BACK UNTIL WHOLE SCREEN DONE
300 ; RET
```



## HAPPY BIRTHDAY SINCLAIR

**SINCLAIR PROGRAMS** is celebrating its third birthday with this issue of the magazine. We began back in the dark ages of home computing, before the launch of the Sinclair Spectrum. The ZX-80 had already started the computing revolution and the ZX-81 had taken us one step further in the march towards everyone owning a personal computer. The Spectrum was launched in June 1982 and the idea of the computer being a hobbyist item was finally eroded.

*Sinclair Programs* was launched by ECC Publications, who sadly are no more, and is now part of the giant EMAP Business and Computer Publications.

We have taken this opportunity to look back with the firms who are over three years old and also to take a look at the new up and coming software houses.

In addition we are having a light-hearted competition involving some of the battle scarred but successful firms who have survived. We hope that all those firms whom we have not included, due to limits of space, will accept our apologies.

**ARTIC** have been in business since the summer of 1980 and claim the notorious distinction of having received national press coverage for one of their games, certain parts of which were slammed for their bad taste. Having weathered this they have also produced their fair share of quality games. Founder of the company, Richard Turner, while still a student produced the very first game, back in 1980 while preparing for his 'A' levels.

5th year

**FIREBIRD** was launched by that old bird British Telecom in a major bid to attack the growing software market. Started in October 1984 they have already carved themselves a niche in the market by producing cheep (sorry) games.

1st year

**OCEAN** have not been around for as long as us but they have more than made up for this by quickly buying up anything that moves, particularly the **US Gold** series of games and a chunk of **Imagine**. So busy are the staff in their empire building that they were not available for comment. All we can say is that every game they produce is almost guaranteed a spot in the top ten chart.

2nd year

**MELBOURNE HOUSE** began in 1978 as a general book and magazine publishing company. Following the success of a ZX-81 book they published they decided to turn their expertise towards computer publishing. Taking the theme of Tolkien's book **The Hobbit**, they launched their first software game, **The Hobbit**, the rest, as they say, is history.

4th year

**PRINT 'n' PLOTTER**, launched in 1981, soon realised that a new market was growing with the advent of the ZX-81 and they were able to exploit the limited graphics of this little machine. They produced graph boards which are even now essential additions for any programmer attempting serious computer graphic design on a Sinclair computer.

4th year

**MASTERTRONIC** began in April 1984. It was the first company to realize the potential of producing budget software. So far it has produced a tremendous sixty two games. **Finders Keepers** is an example of their games, and at £1.99 they are proving a popular choice with the software-buying public.

2nd year

**SILVERSOFT** began in 1981. Although they have been successful in both remaining around so long and producing games that sell well they have not allowed success to go to their heads. It is a long standing tradition in the office that anybody, from the managing director down, may fall victim to the office punishment — the Mickey Mouse hat. While they were unwilling to expand on what offences would be punished by wearing the hat the spokesman's tone of voice implied that perhaps one would not want to know!

4th year

**MIKRO-GEN** began trading in November 1981 through their own shop, and in the early days they also acted as a distribution company. They have enjoyed success with games such as **Witch's Cauldron**, and the continuing series of **Wally** games.

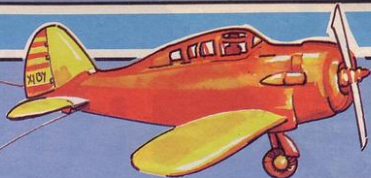
One real life **Wally** arrived with his computer and peripherals which he duly set up. The tape had been running for a minute when he switched it off, and announced, "See, I told you it wasn't working." An explanation was sought and he replied "Well, I only want to play the first part!"

4th year





# R PROGRAMS



**S**OFTWARE FARM were sipped at the post with a start date of August 1982. Julian Chappel and his brother began working on industrial processes at their parent's farm, hence the name of the company. Julian calculated that the demand for ZX-81 software would not decline despite the arrival of the Spectrum. The company started work on the ZX-81 games as everybody else began to switch their resources to the new machine. Software Farm have not only survived as the only company producing games for the ZX-81 but they are very successful. For the future Julian wants to keep the company "Small but beautiful" and will continue with the one man campaign against the bigger machines, so loyal fans of such games as *Fortyniner* and *Rocketman* can expect a bright future.

**3rd year**

**D**IGITAL INTEGRATION are members of the three year oldie club. They are continually amazed by their customers' ingenious interpretations of the company name, examples include *Disintegration*, *Distant Relation*, and *Digital Investigation*. They have produced two smash hit games so far, *Fighter Pilot* and *Night Gunner* and promise two new games.

**3rd year**

**Q**UESTION: What have Margaret Thatcher and *Kempston Micro* got in common? **A**NSWER: They both began above a grocer's shop. Started three years ago, *Kempston* immediately began working on Spectrum peripherals. They also produced one game, entitled *Mission Mars*, but it never got off the ground!

**4th year**

**A** CONVERSATION over tea in *Wimpy's*, Stratford upon Avon, was the setting for the beginning of *Hewson Consultants*. Andrew Hewson, founder of the company, was travelling from Manchester to Oxford with his boss when they stopped for a cup of tea at the Wimpey Bar. He explains "It was the summer of 1980 and the ZX-80 had just been launched. My boss was very impressed with the machine, while I dismissed it out of hand. However, his words 'Look at its price, it's a winner' stayed in my mind." Andrew continued working as a statistician but "pondered the words of wisdom." He eventually ordered a machine and thus finally reached his true destination.

**5th year**



**Z**ANY AUTOMATA have been in business since 1977, although they were not in software publishing at that time. Mel Croucher began his career as an architect and teamed up with fellow director Christian Penfold to work on various projects, one of which was a beer quiz for a radio programme. *Automata UK*, the software publishers, began operating in November 1982. They have been such a successful combination that they are decreasing their number of staff. Don't let this fool you because they achieved pre-tax profits of over £7,000 at their last audit. Their hits include *Deus Ex Machina*, the *Pi-man* series and the advertising campaign which rivals some (not ours, of course!) magazine editorial.

**3rd year**

**T**HE GOOD old *Microfair* was there right at the start with the first show held in September 1981. While public demand for the shows continues the bigger software companies appear to have developed the Howard Hughes syndrome. Mike Johnstone, organiser of the fairs, believes that the *Microfair* will survive anything. This statement was proved by the show held in February of this year. As the country experienced the worst of a British winter people travelled to the show from all over the country. Over 6,000 visitors were recorded despite fears that the bellowing snow storms would stop people attending.

**4th year**

**N**EW GENERATION are over three years old and their new office, a coachhouse, is even older, 100 years old in fact. When they made their attempt to buy it surveyors were, of course, called to evaluate the building. Upon seeing the state of it they refused to go onto the upper floors. Eventually this was resolved, the building bought and builders bought in to restore it. Business is good and they have continued to keep a roof over their heads.

**4th year**

**C**REATIVE SPARKS is Thorn EMI's contender in the software publishing market. Started in April 1984, they have already produced forty two games. Perhaps they are best known for the *Dangermouse* titles. Generally sparking (oops!) they are going for the two extremes in the market, that of low-priced games and more expensive, high-quality software. Future material will probably be influenced by films and music.

**2nd year**

**DORCAS**<sup>TM</sup>  
SOFTWARE  
PRESENT

# THE Runes OF Zendos

- High Resolution Graphics
- Full Animation
- Sentence Input
- 12 Separate adventures
- Sound Effects

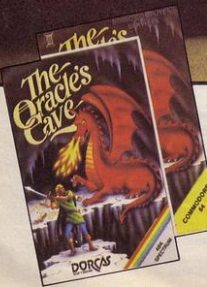
The tiny principality of DORCASIA was a pleasant fertile land until the wizard ZENDOS used his evil powers to cast the country into perpetual darkness until all citizens pledge obedience to him.

It is known that through the SPELL OF DARKNESS Zendos has trapped the spirit of each month into one of 12 GOLDEN TEMPUS RUNES or RUNIC HOUR GLASSES hidden deep within his mysterious and magical castle.

As the land dies in the grip of the black desolation a hero must be found to locate and destroy the 12 hour glasses thus releasing the months and returning Dorcasia to the natural forces of the seasons.

Each glass has a RUNIC inscription around its base which you must read and understand. Only saying these words will lift that part of the spell. To protect the hour glasses Zendos has placed them in 12 separate rooms in his castle, each room linked to a different exterior gateway by a devious route.

Depending on which entrance you select Zendos casts spells which change the locations of rooms within his castle to confuse you. The menacing creatures and challenging problems which confront you at every turn mean that only the brave and the clever will succeed.



## THE ORACLE'S CAVE

**Our best seller available for the  
48K SPECTRUM and COMMODORE 64.**

Oracle's Cave is a unique adventure game featuring continuously displayed high resolution graphics and text, a new cave layout and event sequence for every game and a time limit on every adventure.

Available on cassette from Selected Branches of  
**WHSMITH**  
and other leading retailers or direct from:

### DORCAS SOFTWARE

3 The Oasis, Glenfield,  
Leicester LE3 8QS  
at £7.95 (inc. VAT)  
Postage and Packing FREE

**SPECTRUM 48K**  
COMPATIBLE  
WITH  
ZX  
Microdrives



# BIRTHDAY 3RD ISSUE

## COMPETITION

# COMPETITION

Some of the best software and hardware companies have agreed to help you to help us to celebrate our birthday. **Melbourne House, Mikrogen, New Generation, Silversoft, Artic, Kempston, Hewson Consultants, Print 'n' Plotter** and **Digital Integration** have all donated some of their oldest products and some of their newest products as prizes in our Third Birthday Competition.

Prizes range from a **Kempston Formula 2 joystick**, to fifty sets of free tickets to the **ZX Microfair** to the earliest games produced by **Artic Computing**. **Hutchinson Publishing Group Ltd** have agreed to help put winners in the right mood by donating 10 copies of **Fred Pipes' book 101 Things to do with a dead computer**.

As you can see, there are some very good prizes to be won, and some very silly prizes to be won. Prizes will be awarded to the first 140 correct entries drawn from the bag.

# 140 PRIZES

**To enter:** Use your skill, judgement and, above all, your good sense, to choose the correct answers to the following ten questions. Write your answers (and number them) on a postcard together with your name, address and name of the computer you own. Send the postcard to us at Birthday Competition, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1 to arrive on or before May 31st, 1985.

**Question 1.** Who wrote **The Hobbit** book?

- A. Tolstoy
- B. Tolkien
- C. What Book

**Question 2.** In **Travel with Trashman** how many countries does trashman visit?

- A. Lots
- B. One
- C. Thirteen

**Question 3.** What does ULA mean in computing terms?

- A. United life assurance
- B. Uncommitted Logic Array
- C. Something to do with a television

**Question 4.** What is the maximum amount of memory that can be addressed by the Z80 CPU?

- A. Zillions
- B. 64k
- C. 20k

**Question 5.** Name the title of the only game **Kempston Micro Products** produced?

- A. Joystick Johnny
- B. Mission Mars
- C. They didn't produce one

**Question 6.** Which one of the following was **Mikro-Gen's** first Spectrum program?

- A. Wally Waltz
- B. Dice Champion
- C. Masterchess

**Question 7.** In which of the following towns did the founder of **Hewson Consultants** drink tea in a Wimpy Bar and discover his future?

- A. Luton
- B. Stratford-upon-Avon
- C. New Delhi

**Question 8.** Who organises the **ZX Microfairs**?

- A. Sir Clive Sinclair
- B. Mike Johnstone
- C. Mike Reid

**Question 9.** Name the first program **Digital Integration** produced for the ZX-81.

- A. Spectrum Fun
- B. Fighter Pilot
- C. Gone with the Wind

**Question 10.** What does the 'N' stand for in **Print 'N' Plotter**?

- A. Norris
- B. And
- C. Noddy

Employees of EMAP and of all companies participating in the competition are not eligible to enter. The editor's decision in all matters concerning the competition is final.





1 Knight Lore	Ultimate
2 Decathlon	Ocean
3 Doomdark's Revenge	Beyond
4 Underwurlde	Ultimate
5 Ghostbusters	Activision
6 The Pyramid	Fantasy
7 Jet Set Willy	Software Projects
8 Doomsday Castle	Fantasy
9 Pyjamarama	Mikrogen
10 Matchday	Ocean

## HEIGHTS

## DEPTHS

1 Transylvanian Tower	Richard Shepherd
2 3D Tunnel	New Generation
3 Airwolf	Elite
4 War of the Worlds	CRL
5 Espionage Island	Artic

To register your votes, let us know the program you like most, and the program you hate most. Add your name and address, which will make you eligible for the £10 chart prize. Send your votes to CHARTLINE, Sinclair Programs, Priory Court, 30-32 Farringdon Lane, London EC1R 3AU.

Winner of this month's chart prize is D Shearstone-Walker of Eastbourne, East Sussex.



# ARCADE

## GAMES THAT FIGHT BACK!

### NEW RELEASE

## THE PRIZE



Selected titles  
available from:  
W H Smith, Boots, Menzies,  
and All Good  
Computer Stores

**F The Prize** Your mission to discover the innermost chamber of Midas in a huge planetary maze. If successful you could be in with a chance of winning up to £5000! Only the strongest will survive the devious traps set by the guardians, but just imagine what you could do with the prize. ....

Cassette carries a special £2 discount voucher off your next purchase!

Dealers, please contact us for very special discounts on our games. Phone Orpington 35639.

Programmers. We are looking for high quality m/c games for the Spectrum and Commodore 64 home computers, send them in for evaluation. You have nothing to lose!

All games are for the ZX Spectrum 48K and cost just £5.50 each inc. p.p. VAT etc.

Arcade Software Ltd, Technology House,  
32 Chislehurst Road, Orpington, Kent BR6 0DG  
Tel: Orpington 35639

☐ A I enclose a cheque for £\_\_\_\_\_ or  
☐ B debit my Barclaycard/Access Account★  
☐ C Name \_\_\_\_\_  
☐ D Address \_\_\_\_\_  
☐ E \_\_\_\_\_  
☐ F \_\_\_\_\_  
☐ \_\_\_\_\_★



**A**  
Fast-furious racing in this Arcade game for the Spectrum. 'Ponoon' on side B free!



**B**  
Funny goings-on deep in a mine. Can you escape the evil in its depths? "Original and fun ... dexterity needed ... strategy is also involved" — Games Computing.



**C**  
Defuse a bomb hidden on the complex planet, Lattica, before it blows!! "... action packed game ... addictive" — Sinclair user.



**D**  
The mobs out to get ya' in this no-holds-barred 25 screen, action-packed game. "Tricky and highly entertaining" — Personal Computing News.



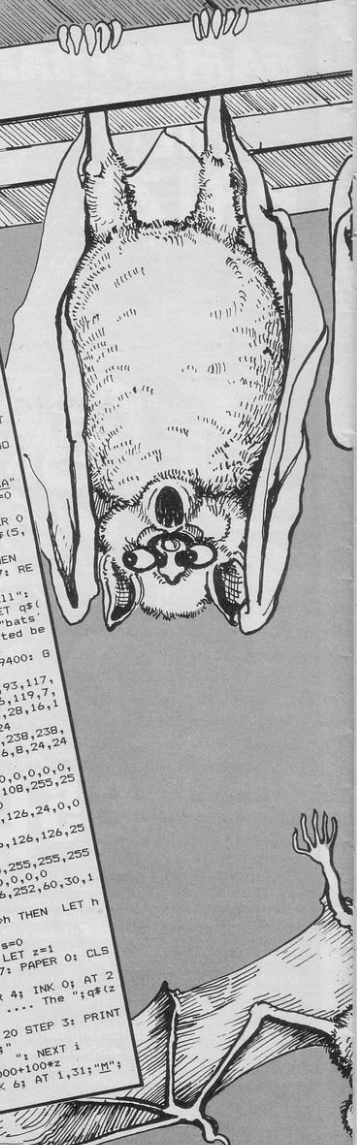
**E**  
50 different screens of mayhem. "A fun game for all ages ... which I thoroughly enjoyed." — Home Computing Weekly.

# HAUNTED BELLTOWER

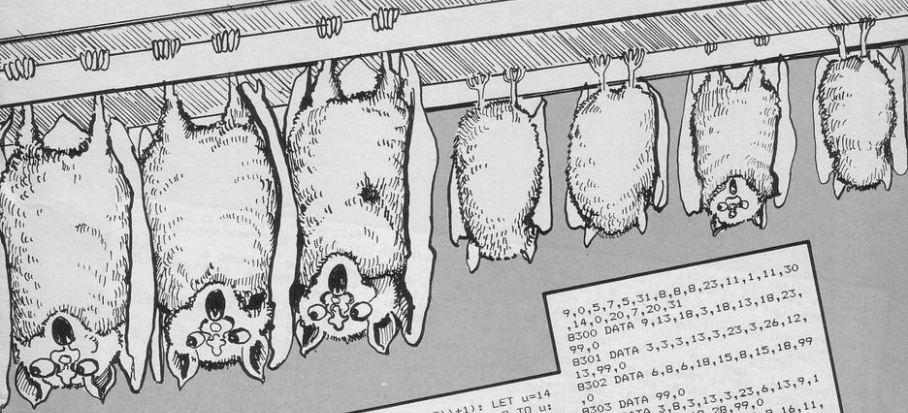
```

15 GO TO 6000
200 IF ATTR (x1,y1) <> 6 THEN
PRINT INK 5; AT x1+1,y1;"L"; G
O SUB 300; LET e=s+1; PRINT INK
6; PAPER 0; FLASH 1; OVER 0; AT
0,e;"L"
210 IF x1=1 AND y1=31 AND e=9 T
HEN LET z=z+1; LET s=s+100; GO
TO 8000
299 RETURN
300 LET e=s+45; PRINT #0; OVER
0; AT 0,15-LEN STR$ s; INK 6;
PAPER 1;
310 FOR j=x1+1 TO 0 STEP -1: PR
INT INK 8; FLASH 8; AT j,y1;"L"
; BEEP .005,40-j*2; PRINT INK 8
; FLASH 8; AT j,y1;"L"; NEXT j
320 RETURN
2000 FOR k=1 TO 2
2040 LET x1:=3*((ATTR (x+2,y)=
7)-(INKEY$=#(3) AND ATTR (x-
1,y)=4))
2070 LET y1:=((INKEY$=#(2) AN
D y<31)-(INKEY$=#(1) AND y>0)
D y<31)-(INKEY$=#(3) AND ATTR (x-
1,y)=4))
2080 IF ATTR (x1+1,y1)=6 THEN
GO SUB 200
2090 PRINT AT x,y1;"(k)";
2095 PRINT AT x1,y1;"(3-k)"; LET
x1+1,y1;b(3-k); LET x=x1; LET
y=y1
2199 IF k=2 THEN GO TO 2262
2200 LET b1=b+(y-b)-(y<b)
2230 LET a1=a+3*((x+1)>a AND A
TTR (a1,b)<(2)-(x+1)<a AND AT
TR (a-2,b)<(2))
2242 IF y=b1 THEN IF x+1=a1 THE
N GO TO 4000
2245 IF b1=b AND RND >.8 AND b1
<27 THEN LET b1=b+5
2250 PRINT AT a,b1;"K"; AT a1,b1
;"K"
2260 LET a=a1; LET b=b1
2261 GO TO 2361
2300 LET d1=d+(y-d)-(y<d)
2330 LET c1=c+3*((x+1)>c AND A
TTR (c1,d)<(2)-(x+1)<c AND AT
TR (c-2,d)<(2))
2342 IF y=d1 THEN IF x+1=c1 THE
N GO TO 4000
2345 IF d1=d AND RND >.8 AND d1
>4 THEN LET d1=d+1
2347 IF d1=d1 AND a1=c1 THEN LE
T d1=INT ((RND *32)); LET c1=3*
(2+INT ((RND *6)))
2350 PRINT AT c,d1;"K"; AT c1,d1
;"K"
2360 LET c=c1; LET d=d1
2399 NEXT k: GO TO 2000
4005 PRINT AT a,b1;"K"; AT c,d1
;"K"
4010 FOR j=a1 TO 1 STEP -4: PRIN
T AT x,y1;"(3-k)"; AT x1,y1;b(3
-k); BEEP .014,j; NEXT j
4030 INK 8; PAPER 8; FLASH 8
4040 LET v=1; LET w=1; LET i=x;
LET j=y; PRINT AT i,j;"K"
4041 FOR u=6301 TO 6300 STEP
1: BEEP .05,(PEEK u)-28
4044 IF i>20 OR i<1 THEN LET v=
v
4045 IF j>30 OR j<1 THEN LET w=
w
4046 PRINT AT i,j;"K"
4047 LET i=i+v; LET j=j+w
4048 PRINT AT i,j;"K"
4050 NEXT u
4051 PRINT AT i,j;"K"
4052 INK 7; PAPER 0; FLASH 0
4060 LET i=1-1: IF i<1 THEN GO
TO 4400
4080 FOR i=7 TO 0 STEP -1: BORDE
R 1; PAUSE 2; NEXT i
4399 GO TO 8500
4401 LET t=0
4405 PRINT OVER 0; PAPER 2; INK
t; AT 7,4;"
"; AT 8,4;"
"; AT 9,4;"
"; AT 10,4;" PRESS KEY
"; AT 11,4;"
0 TO RESTART "; AT 0,26; PAPER 1;
4410 PRINT #0; AT 1,26; PAPER 1;"
"; AT 1,26; PAPER 1;"
4430 LET t=t+1; IF t>7 THEN LET
t=0
4450 IF INKEY$ <> "0" THEN GO
TO 4405
4452 CLS : GO TO 8800
6000 LET p="HHHIO"; LET a$="CA"
: LET b$="DB"; LET s=0; LET n=0
6001 RESTORE : PAPER 0; BORDER 0;
INK 7; OVER 0; CLS : DIM q$(5,
15)
6002 IF PEEK 63000 <> 17 THEN
FOR i= USR "a" TO USR "o":*7; RE
AD j: PDKE i,j: NEXT i
6003 LET q$(1)="entrance hall";
LET q$(2)="wine cellar"; LET q$(
3)="staircase"; LET q$(4)="bats'
bedroom"; LET q$(5)="haunted be
droom";
6004 GO SUB 9800; GO SUB 9400; G
O SUB 9200; GO TO 8800
6005 DATA 112,154,159,61,93,117,
124,56,8,62,93,157,21,116,119,7,
14,89,249,188,186,174,62,28,16,1
24,186,185,168,46,238,224
6010 DATA 187,187,187,0,238,238,
238,0,16,8,24,16,8,24,16,8,24,24
,60,126,98,98,98,126
6015 DATA 255,231,255,0,0,0,0,0,
255,0,16,56,124,84,68,108,255,25
5,183,221,107,170,84,0
6020 DATA 129,219,255,126,24,0,0
,0
6025 DATA 0,24,60,126,126,126,25
5,0
6026 DATA 60,126,255,255,255,255
,255,159,255,0,0,0,0,0,0,0
6027 DATA 56,186,186,252,60,30,1
,0
7700 LET z=1: IF s>h THEN LET h
=s
7710 LET i=3; LET s=0
8005 IF z>5 THEN LET z=1
8006 OVER 0; INK 7; PAPER 0; CLS
8011 PRINT PAPER 4; INK 0; AT 2
1,0;" Room ";z;" .... The "i;q$(z
: NEXT i
8014 FOR i=2 TO 20 STEP 3: PRIN
T INK 5; AT 1,0;"
"; NEXT i
8015 RESTORE 8000+100#z
8017 PRINT INK 6; AT 1,31;"M";
AT 2,31;"M"

```







```

8020 READ X,Y: IF X=99 THEN FJ
TO B050
8025 PRINT INK 3: PAPER 6: AT X
,Y: "EEEEEE": GO TO B020
8050 READ X,Y: IF X=99 THEN GO
TO B061
8060 PRINT AT X,Y: INK 0: PAPER
6: INVERSE 1: P(2): INK 2: PAPER
R 6: "EEEE": GO TO B050
8062 READ X,Y: IF X=99 THEN GO
TO B065
8064 PRINT INK 4: PAPER 1: AT X
,Y: "JJJJJJ": GO TO B062
8070 READ X,Y: IF X=99 THEN GO
TO B072
8071 FOR I=0 TO 4: PRINT PAPER
I: INK 0: INVERSE 1: AT X,Y+I:P
8072 READ X,Y: IF X=99 THEN GO
TO B074
8073 PRINT INK 4: AT X,Y: "E": A
T X+1,Y: "E": AT X+2,Y: "E": AT X
,Y OVER 1: "E": GO TO B072
8080 LET W=0
8093 PRINT AT 0,0: INK 0: PAPER
4: INVERSE 1: "HHHHHHHHHHHHHHHHH
HHHHHHHHHHHHHHHHH": AT 1,3: "E E
E E E E E E E E E E E E E E E E E
8095 INK 4: FOR W=1 TO 4: LET I=

```

```

3*((INT (RND *9))+1): LET U=14
+((INT (RND *7)): FOR J=2 TO U:
PRINT AT J,1: "E": NEXT J: NEXT
W: INK 7
8097 FOR I=1 TO 9: READ X,Y: PRI
NT INK 6: AT X,Y: "L": NEXT I
8100 DATA 3,23,3,26,6,24,9,6,12,
25,15,18,0,18,2,99,0
8105 DATA 6,0,6,2,6,8,6,20,9,11,
12,20,18,10,18,12,99,0
8110 DATA 9,26,12,2,12,6,12,12,1
8,19,99,0
8115 DATA 3,0,3,5,15,10,15,21,99
,0
8120 DATA 18,19,3,8,3,28,6,6,6,2
2,9,13,9,22,12,24,12,10,15,19,18
,11,18,24,99,0
8121 DATA 2,0,2,24,5,12,8,16,8,2
8,11,30,14,16,17,4,17,14
8200 DATA 9,2,12,6,12,7,12,24,12
,26,13,24,13,26,19,8,19,12,99,0
8201 DATA 6,16,9,8,15,0,15,2,15,
16,15,18,18,24,18,26,99,0
8202 DATA 3,18,3,20,3,26,6,26,18
,0,18,12,99,0
8203 DATA 6,6,6,11,9,18,9,23,12,
1,12,13,20,8,20,13,99,0
8204 DATA 3,18,6,20,6,27,9,13,9
25,12,29,15,4,15,17,15,29,18,4,9

```

```

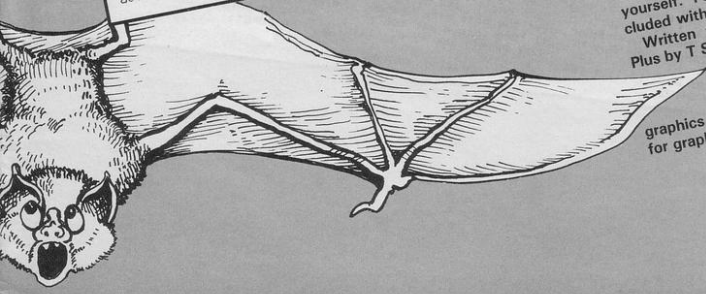
9,0,5,7,5,31,8,8,23,11,1,11,30
,14,0,20,7,20,31
8300 DATA 9,13,18,3,18,13,18,23,
99,0
8301 DATA 3,3,3,13,3,23,3,26,12,
13,99,0
8302 DATA 6,8,6,18,15,8,15,18,99
,0
8303 DATA 99,0
8304 DATA 3,8,3,13,3,23,6,13,9,1
8,12,18,15,23,18,28,99,0
8305 DATA 2,4,2,17,5,10,8,16,11,
13,14,13,17,4,17,13,20,31
8400 DATA 3,26,6,24,6,25,9,1,9,1
1,15,16,15,26,18,0,18,2,99,0,3,1
6,9,5,12,21,13,0,13,4,15,20,18,2
0,18,27,99,0
8401 DATA 3,20,6,0,6,11,12,0,12,5
4,99,0,6,6,12,16,12,26,14,0,14,5
,99,0
8402 DATA 3,16,6,1,6,27,9,16,9,2
7,12,31,15,21,18,5,18,27,99,0,2
6,17,1,17,28
8500 DATA 3,24,3,26,6,20,9,3,9,5
,12,19,15,2,18,18,18,26,99,0,6,2
5,9,15,9,18,12,0,12,3,15,16,18,0
,99,0
8501 DATA 3,2,3,5,3,14,3,16,12,1
1,15,24,15,25,18,10,99,0,6,0,6,6
,6,11,12,27,15,9,99,0
8503 DATA 1,0,3,20,3,29,6,22,9,
16,12,16,15,4,15,20,18,3,18,20,9
9,0,2,2,2,24,5,15,8,10,11,1,11,2
0,11,28,14,2,17,29
8509 LET C=3*(2+(INT (RND *5)))

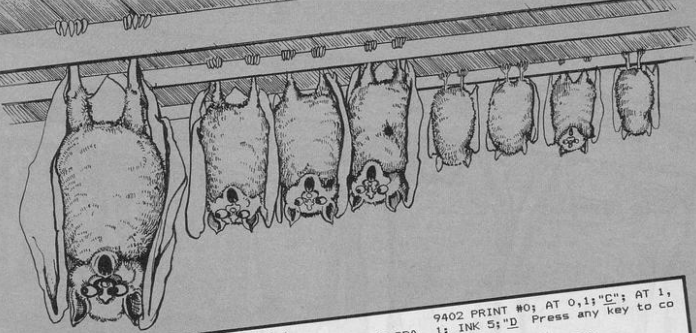
```

**Explore the Haunted Belltower.**  
To move from one room to the next, collect all the bells, but avoid the bats or you will become a bat yourself. Full instructions are included within the game.

Written for the 48K Spectrum Plus by T Sherwood of West Bromwich, West Midlands.

All underlined letters are to be entered in graphics mode. Refer to page five for graphics instructions.

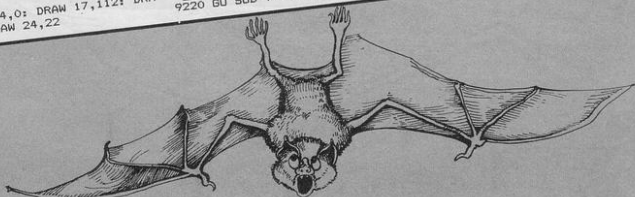




```

j-1: LET d=INT ( RND *32): LET
x=19: LET y=0: LET x1=x: LET y1=
y: LET a=2: LET b=INT ( RND *32
)
8510 PRINT #0: PAPER 1: INK 4: A
T 0,0: (1q5)
      (q5:1q5)
      (q5)
8515 PRINT #0: INK 6: PAPER 1: A
T 0,4: "SCORE 00000": INK 5: AT 1
1: "HI SCORE 00000": INK 4: AT 1
1: "LIVES"
8516 PRINT #0: AT 0,15- LEN STR
20: "LIVES"
8517 INK 6: PAPER 1: AT 1,15-
8518 INK 6: PAPER 1: AT 1,15-
8519 OVER 1: INK 5: PAPER 1:
8520 OVER 1: INK 5: PAPER 1:
8521 AT x1,y1: PRINT AT x,y: (1
); AT x1,y1: (1); AT a,b: (1); A
T c,d: (1)
8525 PRINT #0: AT 0,25: FOR j=1
8530 PRINT #0: PAPER 1: "A":
TO 1: PRINT #0: INK 5: PAPER 1:
NEXT J
8531 PRINT #0: AT 1,25: FOR j=1
TO 1: PRINT #0: INK 5: PAPER 1:
" B": NEXT J
8532 IF j=1 THEN FOR j=63000 TO
8533 BEEP .1: ( PEEK i)-40: FO
R i=1 TO 20: NEXT i: NEXT J: LET
j=j+1
8534 IF j=1 THEN LET f=f+1: IF
f<5 THEN GO TO 8000
8535 IF f=5 THEN GO TO 8000
8536 FOR i=63000 TO 63063
8537 LET n=( PEEK i)-40
8538 BEEP .1: n
8539 IF INKEY#=#(2) THEN GO
TO 2000
8540 NEXT i: GO TO 8720
8541 IF PEEK 63000 < 17 THEN
RESTORE #540: FOR i=63000 TO 630
63: READ n: POKE i,n: NEXT i
9000 OVER 0: CLS
9001 INK 5: RESTORE 9520
9002 INK 5: "1,3:HE": AT 2,2:
9010 PRINT AT 3,2: "BELLTOWER"
"HAUNTED": AT 3,2: "BELLTOWER"
9013 PLOT 11,169: DRAW 27,0: PLD
9013 PLOT 11,169: DRAW 0,-7
T 21,168: DRAW 0,-7
9015 PLOT 86,145: DRAW 7,-7: DRA
W 3,0: DRAW 0,3: DRAW 255,0: DRAW
9090 PLOT 0,0: DRAW 255,0: DRAW
0,175: DRAW -255,0: DRAW 0,-175
9092 PLOT 64,0: DRAW 17,112: DRA
W 2,-24: DRAW 24,22
9100 PLOT 102,0
9110 FOR m=1 TO 5: READ i,j: DRA
W i,j: NEXT m
9120 PLOT 165,44: DRAW 90,-44
9130 FOR m=1 TO 6: READ i,j: PLO
T i+j,i: DRAW -2,12: DRAW -7,3
DRAW 4,-8: DRAW 2,-12: DRAW -7,3
: NEXT m
9140 FOR m=1 TO 2: READ i,j: PLD
T i+j,i: DRAW 1,12: DRAW 3,8: D
RAW 3,-4: DRAW -1,-12: DRAW -5,-
4: NEXT m
9144 PRINT INK 2: AT 11,21: "K"
9145 PLOT 164,60: DRAW -35,44,4
5
9147 LET f=0: LET g=0: INK 7
9148 PRINT #0: AT 1,1: INK 2: "0=
SCREEN DEMO 1=START GAME"
9150 FOR i=63063 TO 63000 STEP -
1: LET n=( PEEK i)-40
9157 BEEP .13,n
9158 IF INKEY# < " " THEN GO
TO 9160
9159 NEXT i: GO TO 9150
9160 IF INKEY#="0" THEN LET g
=1: GO TO 6005
9170 IF INKEY#="1" THEN GO TO
6005
9175 GO TO 9150
9200 CLS: PRINT INK 3: AT 0,0:
"K THE HAUNTED BELLTOWER"
9201 PRINT INK 5: AT 4,0: "The m
ischievous ghosts have taken
down the bells and left them
lying all around."
9205 PRINT INK 6: "Help the rab
bit to collect them. Each bell he
bit to collect them. Each bell he
picks up will fly to it's prop
er place."
9206 PRINT INK 4: "If he collec
ts them all, he can pass through
the door on the top platform to
the next room."
9207 PRINT INK 5: "There are 5
different rooms."
9208 GO SUB 9400
9210 PRINT INK 5: AT 4,2: "Don't
let the bats bite him or he wi
ll turn into a bat too!"
9211 PRINT INK 4: AT 11,10: "K"
K K
9220 GO SUB 9400: RETURN
9402 PRINT #0: AT 0,1: "C": AT 1,
1: INK 5: "D Press any key to co
ntinue"
9440 PAUSE 1: PAUSE 0
9455 IF INKEY# < " " THEN GO
TO 9455
9460 CLS: RETURN
9520 DATA 6,138,5,-28,38,-21,2,2
4,18,-112
9521 DATA 51,84,66,76,81,68
9522 DATA 110,20,125,12,140,4
9523 DATA 16,63,29,73
9524 DATA 17,29,41,53,53,41,29,1
7,19,31,43,55,55,43,31,19,22,34,
46,58,58,46,34,22,24,36,48,60,3
9541 DATA 60,48,36,24,24,60,48,3
6,22,58,46,34,19,55,43,31,17,53
9542 DATA 41,29,53,17,29,41,55,1
9,31,43,58,22,34,46,60,24,36,48
9804 INK 3
9805 RESTORE 9860: READ nk
9807 LET m#="": CLS
9808 PRINT AT 4,3: "CHOOSE USER
DEFINED KEYS: "
9810 FOR i=1 TO nk
9811 READ d$: PRINT " ";
d$: NEXT i: INK 6
9815 RESTORE 9860: READ nk
9816 PRINT AT 0,0: PRINT
9818 FOR i=1 TO nk: READ d$
9819 LET m#=#+ CHR$(0) "d#;
9820 PRINT " ";
9822 FOR j=1 TO 12- LEN d$: PRIN
T " "; NEXT J
9825 PRINT FLASH 1: "?: CHR$(8:
9827 PAUSE 1: PAUSE 0
9830 LET k#=#+ INKEY#
9832 FOR j=1 TO LEN m#
9833 IF m$(j)=k# THEN GO TO 982
7
9834 NEXT J
9840 LET m$(i)=k#: PRINT k#: BEE
P .05,30: NEXT i: INK 7
9858 IF INKEY# < " " THEN GO
TO 9858
9859 RETURN
9860 DATA 3,"LEFT","RIGHT","CLIM
B ROPE"

```





# INFERNO

The tallest tower block in London is ablaze, and people are trapped on the seventeenth floor. The sixteenth floor is already alight and, as the game progresses, more and more smoke and flames will

start to break through. You play the role of firefighter, moving around the screen using cursor keys 5 to 8. Collect as many people as possible and then head for the exit. The exit is obscured by smoke, so you will

have to rely on luck and your compass to help you to escape.

Inferno was written for the 16K ZX-81 by Robert Caldecott of south west London.

```

1 GOSUB 500
2 LET R0=1
3 RAND
4 LET R1=0
5 LET H$="P"
6 LET R2=0
7 RAND CODE H$(INT (RAND+14)+1)
8 LET TT=300
9 PRINT "MOVE" TO SC
10 FOR I=0 TO 21
20 PRINT " "
30 NEXT I
40 FOR I=1 TO 30
42 LET R=INT (RAND+100)
50 LET X=INT (RAND+28)+1
60 LET Y=INT (RAND+3)+1
70 LET L=INT (RAND+(19-X))+2
74 FOR J=0 TO L
80 LET R=INT (RAND+100)
82 LET R$=""
84 IF R/95 THEN LET R$="1"
86 IF R/95 THEN LET R$="R1"
90 PRINT AT Y,X,J,R$
100 NEXT J
110 LET Y=INT (RAND+15)+2+1
120 LET Y=INT (RAND+17)+1
130 LET L=INT (RAND+(19-Y))+2
140 FOR J=0 TO L
142 LET R=INT (RAND+100)
143 LET R$=""
145 IF R/95 THEN LET R$="1"
147 IF R/95 THEN LET R$="R1"
150 PRINT AT Y,X,J,R$

```

```

160 NEXT J
170 NEXT I
171 SLOW
172 PRINT AT 21,0;"PRESS"
173 GOTO 172
175 LET T=0
180 LET P=PEEK 16396+256*PEEK 1
185 RAND
190 LET X=32+INT (RAND+608)+1
195 IF PEEK (P+X)>0 THEN GOTO 1
90
200 LET H=32+INT (RAND+608)+1
205 IF PEEK (P+H)>0 THEN GOTO 2
00
210 LET F=32+INT (RAND+608)+1
211 IF PEEK (P+F)>0 OR RAND>.4 THEN GOTO 218
215 FOR I=0 TO 8
216 POKE P+X,I
220 LET I=INT (INKEY$*8)-1-(INKEY$="0")
221 IF I<0 THEN I=0
222 IF I>8 THEN I=8
230 POKE P+X,I
240 LET T=T+1
242 PRINT AT 21,0;"PRESS"
243 IF TT-T<1 THEN GOTO 450
245 IF PEEK (P+D)>27 THEN LET R
246 IF PEEK (P+D)=8 THEN GOTO 4
00
248 IF PEEK (P+D)<128 THEN LET X=X+1
250 IF X=8 THEN GOTO 350
260 LET XD=INT (X/33)

```

```

265 LET X=X-XD/33
270 LET HD=INT (H/33)
275 PRINT AT 0,5;"PRESS"
280 IF XD=HD THEN GOTO 310
290 IF HD<XD THEN PRINT AT 0,5;"PRESS"
300 IF HD=XD THEN PRINT AT 0,5;"PRESS"
310 IF X=HD THEN GOTO 210
320 IF H=X THEN PRINT AT 0,10;"PRESS"
330 IF H=X THEN PRINT AT 0,10;"PRESS"
340 GOTO 210
350 PRINT AT 3,0;"YOU FOUND THE EXIT IN "T" SECS."
352 PRINT AT 4,0;"NUMBER OF PEOPLE RESCUED:"R2
354 IF R2/R3 THEN GOTO 392
370 GOSUB 600
380 CLS
390 GOTO 3
392 PRINT AT 5,0;"THE MOST SO F"
394 LET R3=R2
396 GOTO 370
400 PRINT AT 3,0;"YOU WERE ENGULFED BY FLAMES AND..."
410 PRINT AT 4,0;"HAVE FAILED IN YOUR RESCUE BID..."
440 GOSUB 600
445 GOTO 3
450 PRINT AT 3,0;"YOU FAILED TO ESCAPE IN TIME"
450 GOSUB 600
470 GOTO 3

```





```

500 PRINT "FIRE-ENGINE"
510 PRINT "YOU ARE A FIREMAN. YOU ARE TO RESCUE
520 BY ANDY. YOU ARE TO RESCUE
530 BY ANDY. YOU ARE TO RESCUE
540 BY ANDY. YOU ARE TO RESCUE
550 PRINT "FLAMES ARE SHOWN BY
560 PEOPLE BY. YOU MUST AVOID THE F
570 RE AND FINDS MANY PEOPLE AS PO
580 BEFORE THE TIME ALLO
590 REACHES ZERO WHEN TH
600 COLLAPSES ENGLUING
610 FLOOR
620 EVERYONE."
630
640 PRINT "ONCE YOU HAVE ROUNDE
650 UP THOSE
660 YOU CAN
670 DO NOT
680 YOU ARE
690 GIVEN DIRECTIONS PRO
700 OUR FLOOR PLAN GUIDANCE COMPUT
710 ER SUCH AS NORTHWEST WHICH TELL
720 YOU THAT TO REACH THE EXIT AN
730 ESCAPE THE FLAMES MOVE NORTHWEST
740
750 PRINT "THOSE PEOPLE YOU RES
760 CUE AND YOURSELF CAN MOVE ALONG
770 CORRIDORS. ONLY BY USING KEYS S
780 678 TO MOVE WEST SOUTH NORTH AND
790 EAST."
800
810 PRINT "YOU ARE SHOWN AT ALL
820 TIMES WHERE YOU ARE. WHERE PEOPLE
830 TO BE SAVED ARE THE TREES
840 ARE THE "THEREMAINING BEFORE THE
850 FLOOR COLLAPSES AND THE NU
860 MBER OF
870 PEOPLE TO BE RESCUED
880
890 PRINT "YOU HAVE 5 MINUTES (
900 SECS) TO GARRY OUT THE RES
910 CUE."
920 PRINT "TO BE A TOP FIRE HER
930 YOU MUST
940 FIND AND SAVE THE MO
950 ST PEOPLE.
960 GOOD LUCK HERO."
970
980 PRINT "PLEASE WAIT FOR THE
990 FLOOR-PLAN TO BE CONSTRUCTED"
1000
1010 PRINT "AT 21.0:
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630
1640
1650
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950
2960
2970
2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
3280
3290
3300
3310
3320
3330
3340
3350
3360
3370
3380
3390
3400
3410
3420
3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
3620
3630
3640
3650
3660
3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
3840
3850
3860
3870
3880
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
4060
4070
4080
4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
4280
4290
4300
4310
4320
4330
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490
4500
4510
4520
4530
4540
4550
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
4720
4730
4740
4750
4760
4770
4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930
4940
4950
4960
4970
4980
4990
5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150
5160
5170
5180
5190
5200
5210
5220
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370
5380
5390
5400
5410
5420
5430
5440
5450
5460
5470
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
5580
5590
5600
5610
5620
5630
5640
5650
5660
5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
5820
5830
5840
5850
5860
5870
5880
5890
5900
5910
5920
5930
5940
5950
5960
5970
5980
5990
6000
6010
6020
6030
6040
6050
6060
6070
6080
6090
6100
6110
6120
6130
6140
6150
6160
6170
6180
6190
6200
6210
6220
6230
6240
6250
6260
6270
6280
6290
6300
6310
6320
6330
6340
6350
6360
6370
6380
6390
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670
6680
6690
6700
6710
6720
6730
6740
6750
6760
6770
6780
6790
6800
6810
6820
6830
6840
6850
6860
6870
6880
6890
6900
6910
6920
6930
6940
6950
6960
6970
6980
6990
7000
7010
7020
7030
7040
7050
7060
7070
7080
7090
7100
7110
7120
7130
7140
7150
7160
7170
7180
7190
7200
7210
7220
7230
7240
7250
7260
7270
7280
7290
7300
7310
7320
7330
7340
7350
7360
7370
7380
7390
7400
7410
7420
7430
7440
7450
7460
7470
7480
7490
7500
7510
7520
7530
7540
7550
7560
7570
7580
7590
7600
7610
7620
7630
7640
7650
7660
7670
7680
7690
7700
7710
7720
7730
7740
7750
7760
7770
7780
7790
7800
7810
7820
7830
7840
7850
7860
7870
7880
7890
7900
7910
7920
7930
7940
7950
7960
7970
7980
7990
8000
8010
8020
8030
8040
8050
8060
8070
8080
8090
8100
8110
8120
8130
8140
8150
8160
8170
8180
8190
8200
8210
8220
8230
8240
8250
8260
8270
8280
8290
8300
8310
8320
8330
8340
8350
8360
8370
8380
8390
8400
8410
8420
8430
8440
8450
8460
8470
8480
8490
8500
8510
8520
8530
8540
8550
8560
8570
8580
8590
8600
8610
8620
8630
8640
8650
8660
8670
8680
8690
8700
8710
8720
8730
8740
8750
8760
8770
8780
8790
8800
8810
8820
8830
8840
8850
8860
8870
8880
8890
8900
8910
8920
8930
8940
8950
8960
8970
8980
8990
9000
9010
9020
9030
9040
9050
9060
9070
9080
9090
9100
9110
9120
9130
9140
9150
9160
9170
9180
9190
9200
9210
9220
9230
9240
9250
9260
9270
9280
9290
9300
9310
9320
9330
9340
9350
9360
9370
9380
9390
9400
9410
9420
9430
9440
9450
9460
9470
9480
9490
9500
9510
9520
9530
9540
9550
9560
9570
9580
9590
9600
9610
9620
9630
9640
9650
9660
9670
9680
9690
9700
9710
9720
9730
9740
9750
9760
9770
9780
9790
9800
9810
9820
9830
9840
9850
9860
9870
9880
9890
9900
9910
9920
9930
9940
9950
9960
9970
9980
9990
10000

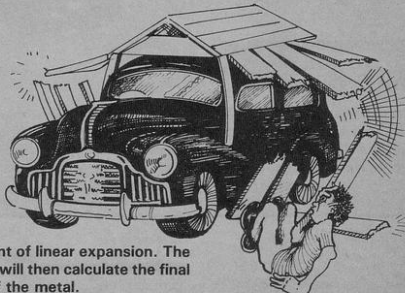
```

## METAL EXPANSION

**C**heck your physics home work with Metal Expansion, written for the Spectrum or Spectrum Plus by Gary Meakin of Clifton, Nottingham.

A metal expands and contracts at a uniform rate when subjected to changes of temperature, providing its elastic limit is not exceeded. Give the original length and temperature of your metal, together with its final temperature and its

coefficient of linear expansion. The program will then calculate the final length of the metal.



```

100 CLS : BORDER 4: PAPER 4: BR
101 IGH 1: CLS : PAPER 4: BRIGHT 1

```

```

190 INK 7
200 PRINT "METAL EXPAN
201 S I O N"
205 PRINT "AT 0,0: OVER 1:"

```

```

206 INK 0
210 PRINT : PRINT "A metal expa
211 nds and contracts at a uniform
212 rate when subjected to changes o
213 f temperature- PROVIDING IT
214 S ELASTIC LIMIT IS NOT EXCEEDED

```

```

225 BEEP .1,10
1010 PRINT "AT 7,0:"CALCULATING
1011 LINEAR CHANGES"
1020 PRINT "AT 9,0:"Enter Origin
1021 al Metal Length"
1030 INPUT La

```

```

1040 PRINT "AT 9,0:"La = ":La;
1041 TAB 15;"mm
1050 BEEP .1,10
1060 PRINT "Enter Initial Temper
1061 ature"
1070 INPUT Ta
1080 PRINT "AT 10,0:"Ta = ":Ta;
1081 TAB 15;"degrees c "
1090 BEEP .1,10
1100 PRINT "Enter Final Temperat
1101 ure"
1110 INPUT Tf
1120 PRINT "AT 11,0:"Tf = ":Tf;
1121 TAB 15;"degrees c"
1130 BEEP .1,10
1140 PRINT "Enter Coefficient of
1141 Expansion"
1145 INPUT Co
1150 PRINT "AT 12,0:"Co = ":Co;
1151 TAB 15;"
1160 BEEP .1,10

```

```

1200 LET Exp=(Tf-Ta)*Co*La
1205 INK 7
1210 PRINT "AT 16,0:"INCREASE=";
1211 Exp;" mm"
1220 BEEP .1,10
1230 LET Ext=Exp+La
1240 PRINT "AT 17,0:"NEW LENGTH=
1241 "Ext"
1250 BEEP .1,10
1260 COPY
1265 INK 0
1270 PRINT "AT 20,0:"ANOTHER CAL
1271 CULATION Y Yes N No"
1280 IF INKEY$="Y" THEN GO TO
1281 100
1290 IF INKEY$="N" THEN CLS :
1291 STOP
1300 GO TO 1280
9000 SAVE "metalex" LINE 100

```

# ODD ONE OUT

**T**est your powers of observation with Odd One Out, written for the Spectrum or Spectrum Plus.

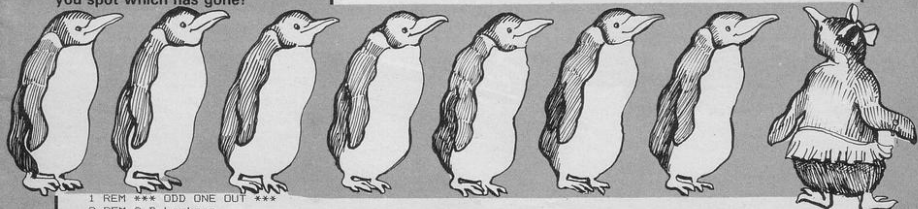
A number of objects will be displayed on screen. Memorise their positions and then press any key. The objects will be displayed, but one will have been removed. Can you spot which has gone?

```

4: 70 IF a=5 THEN PRINT AT x4,z
5: 75 IF a=6 THEN PRINT AT x5,z
6: 80 IF a=7 THEN PRINT AT x6,z
7: 85 IF a=8 THEN PRINT AT x7,z
8: 90 IF a=9 THEN PRINT AT x8,z
9: 95 IF a=10 THEN PRINT AT x9,
z9: "

```

the missing object. If you name it correctly you score 1 point: PRINT #1;"Press a key to continue": PAUSE 0: 8020 CLS : PRINT AT 0,6;"The objects": 8030 PRINT AT 2,0;"A=crab": AT 4,0;"B=man": AT 6,0;"C=ball": AT 8,0;"D=star": AT 10,0;"E=shoe": AT 12,0;"F=face": AT 14,0;"G=moon": AT 16,0;"H=car": AT 18,0;"I=ship": AT 20,0;"J=ring"



```

1 REM *** ODD ONE OUT ***
2 REM © D Larkman.
5 CLS
10 GO SUB 9000
20 GO SUB 8000
25 LET score=0
30 LET a= INT ( RND *10)+1
35 LET z= INT ( RND *31): LET
x= INT ( RND *21): LET z1= INT (
RND *31): LET x1= INT ( RND *21
): LET z2= INT ( RND *31): LET x2
= INT ( RND *21): LET z3= INT (
RND *31): LET x3= INT ( RND *21
): LET z4= INT ( RND *31): LET x
4= INT ( RND *21): LET z5= INT (
RND *31): LET x5= INT ( RND *21
): LET z6= INT ( RND *31): LET x
6= INT ( RND *21): LET z7= INT (
RND *31): LET x7= INT ( RND *21
): LET z8= INT ( RND *31): LET x
8= INT ( RND *21): LET z9= INT (
RND *31): LET x9= INT ( RND *21
)
36 PRINT AT x,z;"A": PRINT A
T x1,z1;"B": PRINT AT x2,z2;"C"
: PRINT AT x3,z3;"D": PRINT AT
x4,z4;"E": PRINT AT x5,z5;"F":
PRINT AT x6,z6;"G": PRINT AT
x7,z7;"H": PRINT AT x8,z8;"I":
PRINT AT x9,z9;"J"
37 PRINT #1;"Press a key": PAU
SE 0: CLS : PAUSE 50
40 PRINT AT x,z;"A": PRINT A
T x1,z1;"B": PRINT AT x2,z2;"C"
: PRINT AT x3,z3;"D": PRINT AT
x4,z4;"E": PRINT AT x5,z5;"F":
PRINT AT x6,z6;"G": PRINT AT
x7,z7;"H": PRINT AT x8,z8;"I":
PRINT AT x9,z9;"J"
50 IF a=1 THEN PRINT AT x,z
:
55 IF a=2 THEN PRINT AT x1,z
1: "
60 IF a=3 THEN PRINT AT x2,z
2: "
65 IF a=4 THEN PRINT AT x3,z
3: "

```

```

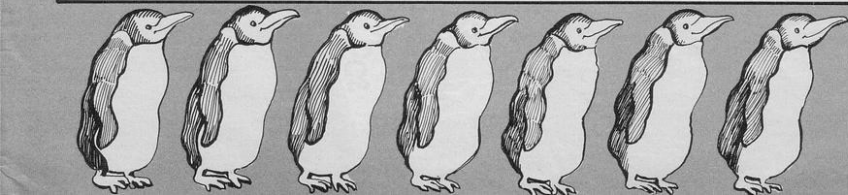
100 INPUT "What's missing ";a$
105 IF a$="crab" AND a=1 THEN
GO TO 200
110 IF a$="man" AND a=2 THEN G
O TO 200
115 IF a$="ball" AND a=3 THEN
GO TO 200
120 IF a$="star" AND a=4 THEN
GO TO 200
125 IF a$="shoe" AND a=5 THEN
GO TO 200
130 IF a$="face" AND a=6 THEN
GO TO 200
140 IF a$="moon" AND a=7 THEN
GO TO 200
150 IF a$="car" AND a=8 THEN G
O TO 200
160 IF a$="key" AND a=9 THEN G
O TO 200
170 IF a$="ring" AND a=10 THEN
GO TO 200
180 GO TO 300
200 CLS : LET score=score+1: PR
INT AT 0,10: FLASH 1:"CORRECT!"
: FLASH 0: PRINT AT 2,2;"You'e
scored ";score: " up to now": P
RINT #1;"Press a key to continue
": PAUSE 0
210 CLS : GO TO 30
300 CLS : BEEP .2,-10: BEEP .2,
-30
310 PRINT AT 0,10;"WRONG!!"
320 PRINT AT 2,2;"But you got
";score: " points"
330 PRINT AT 21,0;"Play again
(y/n)"
340 PAUSE 0: IF INKEY$="y" TH
EN CLS : GO TO 25
350 STOP
8000 CLS
8005 PRINT AT 0,6;"ODD ONE OUT"
8010 PRINT AT 2,0;"The object i
s to find the odd one out. You
do this by inputting the name of

```

```

8040 PRINT #1;"Press a key to pl
ay": PAUSE 0: PAUSE 0: CLS : RET
URN
9000 FOR a= USR "a" TO USR "j"+
7
9010 READ b: POKE a,b
9020 NEXT a
9030 DATA BIN 011000110, BIN 010
00010, BIN 01000010, BIN 0011110
0,255, BIN 01111110, BIN 1010010
1, BIN 00100100
9040 DATA BIN 00111100, BIN 001
11100, BIN 00011000,255, BIN 101
1101, BIN 10111101, BIN 0010010
0, BIN 01100110
9050 DATA 0,0, BIN 00111100, BIN
01111110, BIN 01111110, BIN 011
1110, BIN 00111100,0
9060 DATA BIN 00010000, BIN 100
10010, BIN 01010100, BIN 0011100
0, BIN 00111000, BIN 01010100, B
IN 10010010, BIN 00010000
9070 DATA BIN 01110000, BIN 011
10000, BIN 11100000,255,255, BIN
11001111,0,0
9080 DATA 0, BIN 11111110, BIN 1
0010010, BIN 11111110, BIN 1101
110, BIN 11111110, BIN 10000110,
BIN 01111100
9090 DATA 0, BIN 00111000, BIN 0
111000, BIN 11000000, BIN 11000
000, BIN 11110000, BIN 01110000,0
9100 DATA 0,0, BIN 11111000, BIN
10000100,255,255,255, BIN 011001
10
9110 DATA BIN 00010100, BIN 001
10100, BIN 01101010, BIN 1110101
1, BIN 00010100,255, BIN 0111111
0, BIN 00011000
9120 DATA BIN 00011000, BIN 000
11000, BIN 00111100, BIN 0100001
0, BIN 01000010, BIN 01000010, B
IN 01000010, BIN 00111100
9130 RETURN

```





## 'Calling all whizz kids— my CLEVER CLOGS games are the ultimate challenge!'

These exciting games of skill and chance are the combined work of real life 'Clever Clogs' and their teachers to give you whizz kids the ultimate challenge in computer games that really make learning fun.

Exciting graphics, a wide choice of 'difficulty' levels, plus supplementary knowledge packs for several games in the range make Clever Clogs Britain's best buy in early learning software.

Starting with 'Party Time' for Age 3+, the Clever Clogs range brings a new approach to learning for whizz kids of all ages. And if you join the Clever Clogs Club you'll automatically be eligible for many money-saving special offers.

Selected titles available at W H Smith, Menzies and other leading retailers.

### CLEVER CLOGS early learning games

produced by  
ARGUS PRESS SOFTWARE  
1 Golden Square, London W1R 3AB  
Telephone: 01 437 0626



**Supplementary Knowledge Pack SCIENCE**  
Challenge your whizz kids with 600 science questions

**Supplementary Knowledge Pack THE ARTS**  
600 first steps into Music, Poetry, Painting, Dance, Theatre and English Literature

**STAR TRUCKER**  
for age 9+  
Hyperspace holds no fears for whizzkids who get the answers right

**PARTY TIME**  
for age 3+  
6 different games and increased difficulty options teaching letters and numbers the fun way

**JUNGLE JUMBLE**  
for age 5+  
You've never seen a zoo like this one - a laugh each time with 5 different games and increased difficulty options

**WHIZZ QUIZ**  
for age 7+  
A real challenge to today's whizzkids with increased difficulty options

**BLOCKBUSTER**  
for age 7+  
The puzzle with a million billion variations. Can your whizz kid find the answer?

**SHIPSHAPES**  
for age 3+  
See and understand SHAPES with 5 great games.

**MUSIC**  
for age 7+  
A suite of musical games to encourage budding Beethovens.

**SAM SAFETY**  
for age 5+  
Teach adventurous Sam road sense and guide him safely home.

Spectrum £7.95, BBC and Commodore 64 £8.95, Supplementary Knowledge Packs £5.95.



# THE FINAL TOUCH

**W**e've just added the final touch to our professional keyboard. This new Microdrive compatible keyboard offers more key functions than any other in its price range. And the stepped keys and space bar make it even easier to use. Our keyboard, constructed from high density black ABS, will take your Spectrum into the professional league. It has 52 "stepped" keys plus space bar. A separate numeric key pad consisting of 12 red keys including a single entry 'delete' plus single entry 'decimal point', facilitate fast

numeric data entry. The 15" x 9" x 3" case will accommodate your Spectrum and other addons like interface 1, power supply etc. and forms an attractive self-contained unit. All connections, power, Mic, Ear, T.V., network RS232 and expansion port are accessible at the rear. A few minutes, a screwdriver and the simple instructions supplied are all you need to fit your Spectrum. All **dktronics** products are covered by a comprehensive guarantee.

*Constructed from high density block ABS*

*All connections accessible at rear*

*52 stepped keys*

*Space bar*

*Separate numeric keypad*



ONLY  
**£45.00**

**No Price Increases!**

**And it's Available NOW!**

Please rush me the following

..... Microdrive compatible keyboard(s) ..... £45.00

Please add post and packing ..... £1.25

I enclose cheque/PO/Cash for Total £

or debit my Access/Barclaycard No.

Signature

Name

Address

SP/5/85

## dktronics

DK Tronics Ltd., Unit 6, Shire Hill Industrial Estate, Saffron Walden, Essex CB11 3AQ. Telephone: (0799) 26350 (24 hrs) 5 lines

**The Spectrum Connection**

**FREE WITH EVERY KEYBOARD**

**4 SOFTWARE GAMES**  
MAZICS JIMMY INVADERS  
JIG-ZAG  
Worth £25.80

# We'll take you beyond the Spectrum.

**QUICKSHOT II AUTO RAPID-FIRE JOYSTICK**

**SPECTRUM INTERFACE**

**SPECTRUM UPGRADE KIT**

**TURBO INTERFACE**

Four great new add-ons from Ram, Number One in everything for the Spectrum...

## **TURBO INTERFACE**

Outperforms any other Spectrum interface. Supports Kempston, Protek, Interface 2 and ROM cartridge software, with a full expansion bus at the rear. The Turbo works with two standard joysticks, making the most of the QuicksHOT II's rapid-fire action. Features a unique built-in power safety device. Amazing value at £22.95.

## **QUICKSHOT II AUTO RAPID-FIRE JOYSTICK**

The top games joystick with its sleek trigger fire button and an auto-fire switch for continuous shooting – a snip at only £9.95.

## **SPECTRUM INTERFACE**

This Kempston-compatible interface adds real games power to your Spectrum. Costs just £9.95.

## **SPECTRUM UPGRADE KIT**

Boost your 16K Spectrum to a full 48K, allowing you to run all the latest and greatest software. Only £21.95

Where can you get your hands on Ram's amazing Spectrum add-ons? You can see them at branches of Boots, Menzies, Greens, Spectrum Group computer centres, and good computer stores everywhere.

Ram Electronics (Fleet) Ltd (Dept SP), 106 Fleet Road, Fleet, Hampshire GU13 8PA.  
Credit Card hot line: 02514 25252. (Access & Visa).

Please send me ☐ Spectrum Turbo Interface(s) at £22.95.  
☐ QuicksHOT II Joystick(s) at £9.95.  
☐ Spectrum Interface(s) at £9.95.  
☐ Spectrum Upgrade Kit(s) at £21.95.  
(Please state issue 2 ☐ or 3 ☐)

+£1 per order P+P (£3 Overseas) **TOTAL £**

☐ I enclose cheque/postal order ☐ charge my Access/Visa



Expiry Date \_\_\_\_/\_\_\_\_/\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Postcode \_\_\_\_\_

Telephone \_\_\_\_\_

24 Hour despatch for credit cards and postal orders (7 days for cheques.)  
All products are fully compatible with the Spectrum, Spectrum + and Sinclair Microdrives.

Ram Electronics (Fleet) Ltd  
(Dept SP), 106 Fleet Road,  
Fleet, Hampshire GU13 8PA.



Trade and Export enquiries welcome.